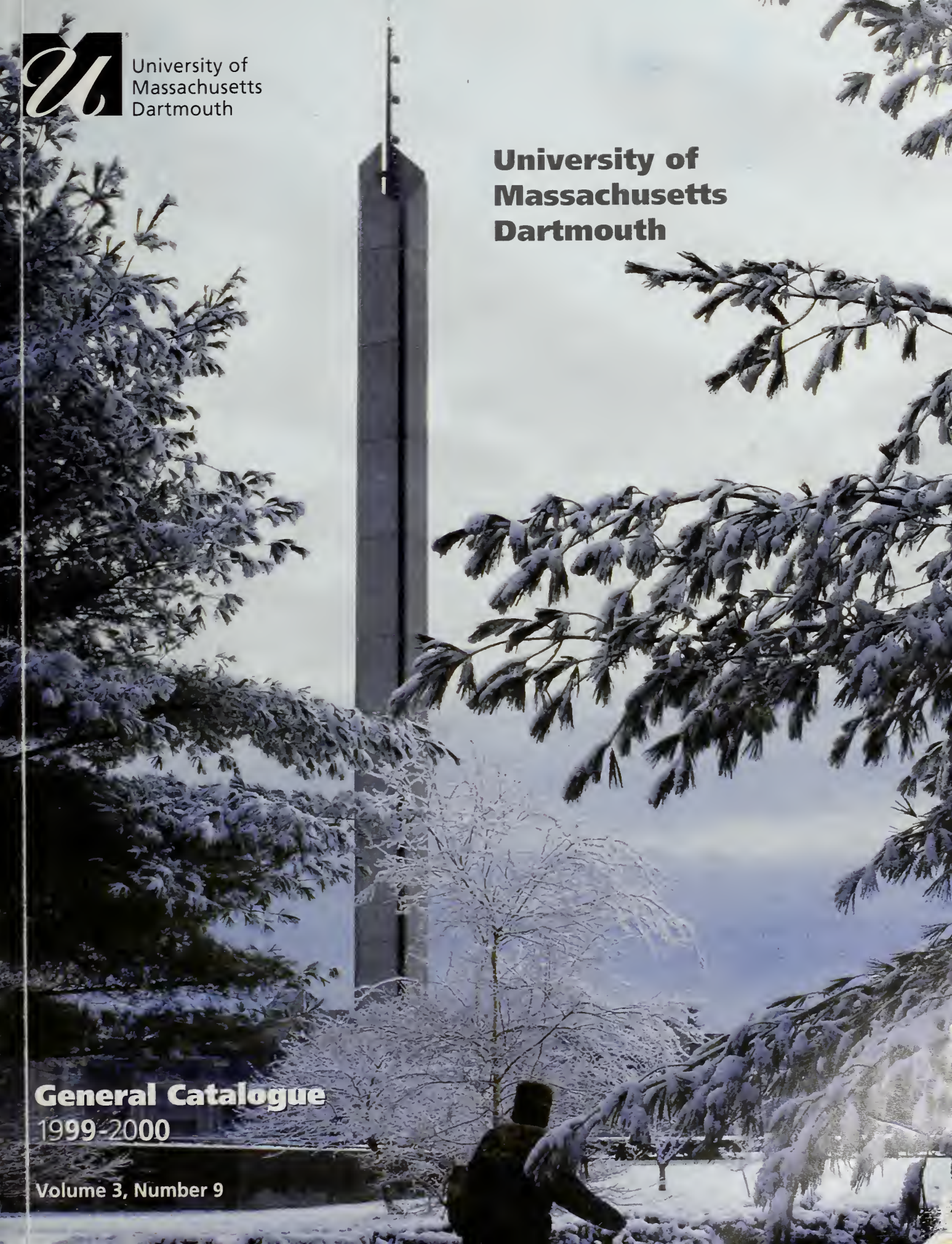
University of
Massachusetts
Dartmouth

University of Massachusetts Dartmouth



General Catalogue
1999-2000

Volume 3, Number 9

Accreditation

University of Massachusetts Dartmouth is accredited by the New England Association of Schools and Colleges, which accredits schools and colleges in the six New England states. Membership in the Association indicates that the institution has been carefully evaluated and found to meet standards agreed upon by qualified educators. Many specific programs are also accredited by professional or educational associations, as stated in the college and departmental sections of this publication.

Compliance

The University of Massachusetts Dartmouth complies with both the intent and spirit of appropriate federal and state antidiscrimination laws including Title VII of the Civil Rights Act, Title IX of the Educational Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990.

Statement of Equal Opportunity and Affirmative Action

University of Massachusetts Dartmouth wholeheartedly supports and encourages the development of action programs designed to promote the employment and advancement of women, Blacks, Latino, Asians, Native Americans, persons with disabilities, and Vietnam-era Veterans as a means of assuring compliance with the provisions of campus Affirmative Action plans.

The University firmly supports the concept of equal opportunity without regard to an individual's race, color, age, religion, gender, sexual orientation, national origin, disability, or veteran status as it applies to his/her employment, admission to and participation in the University's programs and activities, provision of services, and selection of vendors who provide services or products to the University.

The following person has been designated to handle inquiries regarding the nondiscrimination policies: Assistant Chancellor for Equal Opportunity/Diversity/Outreach, Foster Administration Building, Room 327, University of Massachusetts Dartmouth, 285 Old Westport Road, North Dartmouth, MA 02747. Telephone 508 999-8008.

Inquiries concerning the application of nondiscrimination policies may also be referred to the Regional Director, Office for Civil Rights, US Department of Education, J. W. McCormack Building, Room 222, Boston, MA 02109-4557.

Resolution in Support of Pluralism

The Board of Trustees affirms its commitment to maintaining an academic environment which fosters pluralism, mutual respect, appreciation of divergent views, and awareness of the importance of individual rights. To this end, we reassert the importance of civility and the valuable contribution that diversity in race, ethnicity, religion, sexual orientation and culture brings to the University community, and therefore we strongly encourage and support racial, ethnic, cultural and religious pluralism. (University of Massachusetts, 6/3/92)

Policy Against Intolerance

The Board of Trustees denounces intolerance, particularly that based on ethnicity, culture, religion, race or sexual orientation which interferes with those rights guaranteed by law, and insists that such conduct has no place in a community of learning. We also recognize the obligation of the University to protect the rights of free inquiry and expression, and nothing in the Resolution in Support of Pluralism or Policy Against Intolerance shall be construed or applied so as to abridge the exercise of rights under the Constitution of the United States and other Federal and State laws. (University of Massachusetts, 6/3/92)

Statement on Cultural Diversity and Inclusion

University of Massachusetts Dartmouth affirms its strong support and deep commitment to the continued development and maintenance of an academic community in which the individual dignity and potential of each of its members are given full respect, recognition, and encouragement. Our goal is an institution in which all may study, live, and work securely and productively in an atmosphere characterized by civility and openness to the pursuit of academic excellence in the finest tradition of academia.

University of Massachusetts Dartmouth is opposed to and condemns racism. Acts of harassment, intimidation, or invasion of privacy which interfere with the rights of an individual or group to participate in the activities of the academic community shall be considered to be in violation of this policy and may be dealt with appropriately under applicable University codes and as regulated by statute.

We recognize the affirmative obligation of the University to foster a diverse and integrated learning environment. To this end, the University has a responsibility to vigorously pursue efforts to attract minorities, women, and members of other historically disadvantaged groups as students, faculty members, and staff in sufficient numbers to alleviate isolation and to ensure real integration and diversity in academic life. We also recognize our obligation to nurture community-wide appreciation of cultural diversity and will dedicate appropriate resources to meet this commitment on an on-going basis.

Statement on Sexual Harassment

Sexual harassment is sex discrimination and, therefore, a violation of federal and state law. It is the policy of the University of Massachusetts that no member of the University community may sexually harass another. For purposes of this policy and consistent with federal regulations, sexual harassment is defined as follows:

Unwelcomed sexual advances, requests for sexual favors and other verbal or physical conduct of a sexual nature constitute sexual harassment when:
1.
submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or academic work,
2.
submission to or rejection of such conduct by an individual is used as the basis for employment or academic decisions affecting such individual or
3.
such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile or offensive working or academic environment.

It is the policy of the University of Massachusetts to protect the rights of all persons within the University community by providing fair and impartial investigations of all complaints brought to the attention of appropriate officials. Any member of the University community found to have violated this sexual harassment policy will be subject to disciplinary action.

Chancellors are directed to take appropriate measures to inform each member of the University community of this policy statement and to develop procedures, in conjunction with the President's Office, for filing, hearing, and resolving complaints. (University of Massachusetts, 6/3/92)

Statement on Gender Discrimination

University of Massachusetts Dartmouth is committed to ensuring equality and avoiding gender discrimination. Therefore, it is the University policy to avoid, in all University publications and communications, the use of language that perpetuates gender bias. University employees are encouraged to use gender-neutral language. In selecting textbooks and readings of the very highest quality, faculty are urged to select those that are free of gender bias.

University of Massachusetts
Dartmouth

General Catalogue
1999—2000

Undergraduate Programs and Courses, Policies, and Procedures

University of Massachusetts Dartmouth (USPS #015-139)
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Purposes of this Catalogue

This catalogue is the official source of information about the University's undergraduate academic programs, its approved courses, and associated policies and procedures. Its purpose is to guide students in planning a course of study and in meeting program, department, and University requirements; and to provide information about the University to students, employees, applicants, parents, teachers, counselors, and the general public. See the table of contents and index for an outline of the information provided.

This catalogue emphasizes the university's undergraduate programs. For centrality of reference, however, it lists all current graduate as well as undergraduate courses of the university. Please consult the *Graduate Catalogue* for detailed graduate program information.

The information in this catalogue should be current for the time of publication, although some changes may have occurred between the time of going to press and the opening of the academic year. *The University reserves the right to change at any time the degrees, programs, and services offered, the requirements, and the courses.* Corrections of errors may also be made. All official changes and corrections will be filed with the Office of Academic Affairs/Graduate Studies and the Registrar

Such charges as tuition and fees, the policies associated with such charges, and academic or general University policies are subject to change without notice. There will be no refund of tuition, fees, charges, or any other payments made to the University in the event that the operation of the University is suspended at any time as a result of any act of God, strike, riot, or disruption, or for any other reasons beyond the control of the University

The information in this publication is provided solely for the convenience of the reader, and the University expressly disclaims any liability which may otherwise be incurred. *This publication is neither a contract nor an offer to make a contract.*

More information available on World Wide Web

The University of Massachusetts Dartmouth home page can be reached on the Internet's World Wide Web at:

http://www.umassd.edu/

This complete catalog, plus more information about different aspects of the University, can be found from our home page.

As this catalog went to press, our constantly growing Web pages included detailed information about: Admissions, career services, directions to the university, financial aid, sports, student organizations, and special research projects. University news releases, special events announcements, and other publications are also on the Web.

In addition, there are links to home pages with in-depth information about many academic departments and university programs. There are also links to the other UMass campuses.

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List of Undergraduate Programs

Listed are majors with the degree offered and any formal options within majors. Approved minors are also shown.

College of Arts and Sciences

Biology BS
- biology
- marine biology

Chemistry BS
- chemistry
- biochemistry
- pre-medical
- BS-MS option

Economics BA
English BA
- drama/film studies
- literature
- writing/communication

French BA
History BA
Humanities and Social Sciences BA
Mathematics BS or BA
- mathematics
- computer-oriented mathematics

Medical Laboratory Science BS
- clinical laboratory science
- cytotechnology

Multidisciplinary Studies BA or BS
Philosophy BA
Political Science BA
Portuguese BA
Psychology BA
Sociology BA
- sociology
- anthropology/social anthropology
- criminal justice
- social services

Spanish BA

Education: elementary and secondary teacher certification

Minors in Anthropology, Biochemistry, Chemistry, Economics, English, French, German, History, Mathematics, Philosophy, Political Science, Portuguese, Sociology, Spanish

Charlton College of Business

Accounting BS
Business Information Systems BS
Finance BS
Management BS
Marketing BS

Minor in Business Administration

College of Engineering

Civil Engineering BS
Computer Engineering BS
Electrical Engineering BS
Mechanical Engineering BS
- mechanical engineering
- manufacturing engineering

Computer Science BS
Physics BS
- physics
- materials science

Textile Chemistry BS
Textile Science BS
- general option
- applied fiber option

Minors in Electrical and Computer Engineering; Computer Science, Software Engineering, and System Software; and Physics

Electrical Engineering Technology BS and Mechanical Engineering Technology BS, available through Division of Continuing Education

College of Nursing

Nursing BS
- basic program
- RN track

College of Visual and Performing Arts

Art Education BFA
Art History BA
Music BA
Painting/2D Studies BFA
Sculpture/3D Studies BFA
Textile Design/Fiber Arts BFA
Visual Design BFA
- ceramics
- graphic design/letterform
- illustration
- jewelry/metals
- photographic/electronic imaging

Minors in Art History, Music

Certificates in Artisanry, Fine Arts

Interdisciplinary Minors

African and African-American Studies
Gerontology
Judaic Studies
Labor Studies
Women's Studies

Special Programs/Curricula

Gerontology Certificate
Honors Program
International Marketing/French Certificate
Labor Studies Certificate
Pre-Law
Pre-Medical
Post-Baccalaureate Certificate Program
UMass Dartmouth/Southern New England School of Law Three-Plus-Three Program

List of Graduate Programs

Graduate programs are described and courses listed in the *Graduate Catalogue*, available from the Office of Graduate Affairs.

Artisanry MFA

Art Education MAE

Biology/Marine Biology MS

Business Administration MBA

Chemistry MS

Computer Science MS

Electrical Engineering MS, PhD

Fine Arts MFA

Master of Arts in Teaching MAT

Mechanical Engineering MS

Nursing MS

Physics MS

Professional Writing MA

Psychology MA

Textile Chemistry MS

Textile Technology MS

Visual Design MFA

Accreditations

UMass Dartmouth has full accreditation from the regional accrediting organization for New England higher education institutions:

New England Association of School and Colleges (NEASC).

Some academic fields have external accrediting agencies which review and accredit academic programs or the campus, in addition to regional accreditation. These agencies accredit programs either at the undergraduate level only or at all levels of study.

The following specific programs are accredited:

Chemistry (BS level)	American Chemical Society (ACS)
Computer Science	Computing Sciences Accreditation Board (CSAB)
Civil Engineering, Computer Engineering, Electrical Engineering, Mechanical Engineering; Electrical and Mechanical Engineering Technology (BS levels)	Accreditation Board for Engineering and Technology
Nursing	Nursing Commission, The National League for Nursing Accrediting (NLNAC)
Medical Laboratory Science	National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)
Art History, Art Education, Visual Design, Textile Design, Artisanry, and Fine Arts	National Association of Schools of Arts and Design (NASAD)
Teacher Certification program, Master's of Art in Teaching, Art Education	Commonwealth of Massachusetts Department of Education/National Association of Departments of Teacher Education (NASDTEC)

The following are candidates for accreditation:

Accounting, Business Information Systems, Finance, Management, Marketing, MBA	American Association of Collegiate Schools of Business (AACSB) — in active candidacy status with final review to occur in 1999-2000

UMass Dartmouth's External Identification Numbers

College Board	3786
FAFSA	002210
IPEDS UNITID	167987
FICE/OPEID	002210
Federal TIN	04-3167352
DUNS (Dunn & Bradstreet)	79-947-7427

Carnegie Classification

Master's (Comprehensive) Universities and Colleges I

Introduction to the University

The University of Massachusetts

Founded as an agriculture college in Amherst in 1863, the University of Massachusetts is a uniquely American institution, a public land-grant university. Such institutions have three basic characteristics:

- First, they are "people's universities," intended to serve all students who can do the academic work.
- Second, they are committed to practical as well as theoretical education.
- Third, they put new knowledge to work for the common good.

With those firm guidelines and a modest start from the sale of federal lands, the Amherst college grew to become the modern University of Massachusetts, the largest university, public or private, in New England. The UMass of today includes campuses in Amherst, Boston, Dartmouth, and Lowell and a Medical School in Worcester.

The University of Massachusetts Dartmouth

UMass Dartmouth provides educational programs, research, and continuing education services in the liberal and creative arts and sciences and in the professions. It offers a broad range of baccalaureate and graduate degrees vital to the economic and cultural well-being of the region and the Commonwealth.

The Dartmouth campus traces its roots to 1895. In that year the legislature chartered the New Bedford Textile School and the Bradford Durfee Textile School in Fall River.

As the region's economic base shifted from textiles to more diverse manufacturing and service industries, the colleges changed too. They diversified their curricula, responding to the needs of new generations of students. By the middle of the 20th century they were growing rapidly, spurred by such forces as the GI Bill and the clear economic and social advantages of a well-educated citizenry. They had become multipurpose institutions, preparing engineers, health care workers, teachers, and business leaders.

In 1962 the state legislature created Southeastern Massachusetts Technological Institute by merging the small colleges in New Bedford and Fall River. The 710 acre campus in North Dartmouth, part way between New Bedford and Fall River, was begun in 1964. The dramatic campus design was the work of architect Paul Rudolph, then dean of Yale's school of Art and Architecture.

There was a clear public demand for a comprehensive university, and in 1969 SMTI became Southeastern Massachusetts University.

The university continued to grow through the 1970s when its residence halls were finished and through the '80s as research and studio facilities came into being. In 1988 the Dion Science and Engineering Building was opened, as was the Cedar Dell Town-house Complex. Also in 1988, the Swain School of Design merged with the university's College of Visual and Performing Arts, strengthening programs in art and artisanry. The Swain merger brought additional art facilities in New Bedford to the university.

In 1991 a new University of Massachusetts structure combined the Amherst, Boston, and Worcester campuses with Southeastern Massachusetts University and the University of Lowell. Thus Southeastern Massachusetts University became the University of Massachusetts Dartmouth.

In 1994 UMass Dartmouth received approval to offer its first PhD degree, in Electrical Engineering. It also offers several joint doctoral programs with other UMass campuses.

In 1997 construction was completed of the Center for Marine Science and Technology, located on 2.6 acres in New Bedford near Buzzards Bay. A full program of research and development is now supported in this new facility.

UMass Dartmouth has over 6,000 students, more than 2,000 of whom live on campus. It offers more than 40 undergraduate majors and 18 graduate programs, and has more than 300 full-time faculty.

The UMass Dartmouth Vision

Drawing from the vision statement for the entire University of Massachusetts, UMass Dartmouth developed a campus vision statement in 1992 placing emphasis on a special relationship between undergraduate and graduate education. Here's that statement:

The University of Massachusetts Dartmouth distinguishes itself by providing an intimate academic environment where the scholarly research and creative activities of faculty and graduate students are interwoven with the undergraduate experience. More than a regional university, the Dartmouth campus offers programs of educational excellence to undergraduate and graduate students from throughout the Commonwealth and beyond. While its academically distinguished faculty engage in professional activities of national and international scope, the campus has long been committed to economic development and has been a catalyst for regional initiatives. The university will continue its commitments to education and public service while expanding research efforts, establishing additional graduate programs, and addressing the educational needs of the state's increasingly diverse population. Its mission will reflect the university's in the following ways:

Access—Providing, within a personalized setting, a wide range of high quality baccalaureate and masters programs and selected doctoral programs; meeting the full financial need, as defined by standard measures, of all qualified applicants; strengthening student outreach efforts and collaboration with schools and community colleges; encouraging and supporting the educational aspirations of under-represented student populations, thereby increasing the diversity of the campus community; easing transfer among institutions; and offering flexible programs for working adults.

Excellence—Offering intellectually challenging undergraduate and graduate programs that meet both individual student needs and those of the state; offering solid liberal arts curricula, for their own sake and as a foundation for professional programs; obtaining and maintaining national program accreditation where applicable; exposing students to new ideas and developments in their fields through close interaction with faculty; and building distinctive doctoral programs where research strengths exist and where special resources and needs are identified, such as the coastal marine environment, and including joint programs with other UMass campuses.

Innovation—Enabling undergraduate and graduate students to experience the creation and application of new knowledge by expanding opportunities for them to participate in faculty research on campus and internships at nearby public and private organizations, thereby enriching students' education and aiding development in the region; continuing to create innovative interdisciplinary courses and degree programs, such as project-driven courses and community-based collaborative projects in health, education and the social sciences; and placing increased emphasis on a holistic approach to the undergraduate experience.

Economic Development and Global Competitiveness—Modernizing undergraduate and graduate education and supporting economic development by more closely linking liberal and professional education with the workplace, so that students can better integrate and apply their knowledge as they learn; providing research and technology transfer to marine and environmental industries; and providing research assistance and consultation to business, labor, government, health care and social service organizations.

Public Service—Improving the effectiveness of elementary and secondary education through collaborative undergraduate and graduate teacher education and in-service programs; adding cultural dimension to the lives of citizens through exhibitions and performances in the visual and performing arts; and providing support to businesses, human services organizations, and municipalities through research and policy analysis, student internships, forums, training assistance, and community-based programs.

Quality of Life—Enhancing and supporting the quality of life for individuals within a culturally diverse university community and for the citizens of the region by providing university-level library resources, distinguished programs in the visual and creative arts, and an accessible, stimulating intellectual environment; celebrating the cultural and linguistic richness of the area in studies and events; hosting eminent scholarly forums; and building a university community that fosters personal development, respect for the individual and cultural diversity of others and responsible citizenship.

Mission Statement — The University of Massachusetts

The University's mission is to provide an affordable education of high quality and conduct programs of research and public service that advance our knowledge and improve the lives of the people of the Commonwealth.

"...it is for life, not only for a living, that we must prepare our students."
— William M. Bulger, President

Strategic Priorities of the University of Massachusetts

1) **The University shall maintain the highest standard of academic excellence.**
The University of Massachusetts shall provide a quality, affordable university education to the citizens of the Commonwealth. The University shall strive to serve all qualified students regardless of their economic means. The University shall pursue distinction in its research and scholarship.

2) **The University shall maintain an atmosphere where each person, regardless of religious, ethnic, economic or social background, will be comfortable.**
The University shall enroll and employ a diverse community of people.

3) **The University shall offer and promote distinctive forms of public service.**
The University of Massachusetts shall provide the state with policy research, programs, and leadership to address public needs. The University shall support efforts to improve primary and secondary education and shall expand its continuing education programs to encourage lifelong learning. The University shall continue to promote the economic development of the state and its regions.

4) **The University shall develop and manage its resources effectively.**
The University shall wisely manage existing resources and aggressively develop new sources of revenue to meet operating and capital needs.

5) **The University shall demonstrate the excellence and advance the unique missions of its five campuses.**
The University shall encourage its five campuses to pursue with distinction their respective strengths and strive to serve the best interests of their communities.

Academic Calendar

1998-1999

First Semester — Fall 1998

Tuesday September 1, 1998	Academic year commences
Monday September 7	Labor Day, no classes
Wednesday September 9	Fall classes begin Freshman Convocation
Tuesday September 15	Last day to Add/Drop
Monday October 12	Columbus Day, no classes
Tuesday October 13	Last day to file Pass/Fail
Friday October 23	Mid-Semester
Wednesday November 11	Veterans' Day, no classes
Tuesday November 17	Last day to withdraw from a class
Wednesday November 25	Thanksgiving recess begins (after last class or lab)
Monday November 30	Classes resume, 8:00 a.m.
Monday December 14	Fall classes end
Tuesday December 15	Study day
Wednesday December 16	Examinations begin
Tuesday December 22	Examinations end

December 22, through Monday, January 25, Mid-Year Vacation

Second Semester — Spring 1999

Monday January 18, 1999	Martin Luther King Jr.'s Birthday, university closed
Tuesday January 26	Spring classes begin
Monday February 1	Last day to Add/Drop
Monday February 15	Presidents' Day, no classes
Monday March 1	Last day to file Pass/Fail
Friday March 12	Spring Vacation begins (after last class or lab)
Monday March 22	Classes resume, 8:00 a.m.
Tuesday March 23	Mid-semester
Monday April 12	Last day to withdraw from a class
Monday April 19	Patriots' Day, no classes
Wednesday May 5	Honors Convocation
Wednesday May 12	Spring classes end
Thursday May 13	Study Day
Friday May 14	Examinations begin
Thursday May 20	Examinations end
Monday May 31	Memorial Day, university closed
Sunday June 6	Commencement

1999-2000

First Semester — Fall 1999

Wednesday September 1, 1999	Academic year commences
Monday September 6	Labor Day, no classes
Wednesday September 8	Fall classes begin Freshman Convocation
Tuesday September 14	Last day to Add/Drop
Monday October 11	Columbus Day, no classes
Tuesday October 12	Last day to file Pass/Fail
Friday October 22	Mid-Semester
Thursday November 11	Veterans' Day, no classes
Tuesday November 16	Last day to withdraw from a class
Wednesday November 24	Thanksgiving recess begins (after last class or lab)
Monday November 29	Classes resume, 8:00 a.m.
Monday December 13	Fall classes end
Tuesday December 14	Study day
Wednesday December 15	Examinations begin
Tuesday December 21	Examinations end

December 21, through Monday, January 25, Mid-Year Vacation

Second Semester — Spring 2000

Monday January 17, 1999	Martin Luther King Jr.'s Birthday, university closed
Wednesday January 26	Spring classes begin
Tuesday February 1	Last day to Add/Drop
Monday February 21	Presidents' Day, no classes
Tuesday February 29	Last day to file Pass/Fail
Friday March 10	Spring Vacation begins (after last class or lab)
Monday March 20	Classes resume, 8:00 a.m.
Tuesday March 21	Mid-semester
Tuesday April 11	Last day to withdraw from a class
Monday April 17	Patriots' Day, no classes
Wednesday May 3	Honors Convocation
Thursday May 11	Spring classes end
Friday May 12	Study Day
Monday May 15	Examinations begin
Saturday May 20	Examinations end
Monday May 29	Memorial Day, university closed
Sunday June 4	Commencement

Admission to the University

Phone: 508-999-8605
www:umassd.edu

Undergraduate admission to the university is selective, based on academic performance and promise. The university is interested in applicants whose scholastic performance, aptitude, interests, character, and study habits give promise of success.

UMass Dartmouth admits its applicants into a specific curriculum, which is either a certain major or a cluster of majors. Applicants are evaluated both by general standards of qualification to do university work and by special standards for admission into the academic areas that they request. Access to programs may be limited by constraints of space and financing.

Each applicant's overall record is assessed for both strengths and weaknesses as indicated by such records as the candidate's secondary school class standing; subjects completed, curricular levels, and grades received; SAT or ACT scores; college-level records for transfer applicants; and other appropriate indicators. This approach gives attention to each applicant as an individual. We do not make admissions decisions based on quotas or formulas.

UMass Dartmouth admits applicants by "rolling admission." This means that there is no set deadline and qualified candidates will be accepted until the time when the university's capacity has been reached in the program of choice.

Interviews and Campus Visits
We invite applicants and family members to visit the campus and become acquainted with the university. A personal interview is not required. Several times each week from October to April, and on many Saturdays, the Admissions Office schedules information sessions and campus tours. Tours are also available during the summer. Individual tours can also be arranged. Those interested are invited to call. Classroom visits may be arranged in some majors.

General Application Procedures

Freshman applicants should complete their applications as soon as possible after the conclusion of the first marking period of their senior year, preferably before the end of December and at the latest by March. Transfer applicants should apply as soon as they can after their fall semester grades are available.

As soon as a sufficient number of qualified candidates for the available space in each program—and for on-campus housing—have been admitted, admission into that program will be closed. After March, some well-qualified candidates may be denied entrance to the university or to their first-choice program. The general laws of supply and demand have a significant effect on the admissions process. As the interests of students change from time to time, enrollment pressures in different fields of study either increase or diminish.

The university requires each applicant to submit the record of prior schooling and the results of standardized test scores. Other information may be requested, and all information submitted will be considered. Every year, the university's *Admissions Viewbook* gives complete information and instructions, identifying the specific records and other information that must be submitted. The *Viewbook also* contains an application form. Those interested are invited to call to request a copy.

Application/Processing Fees
Reasonable nonrefundable application fees are charged as announced in the next section of this *Catalogue*.

The application fee may be waived upon demonstration of significant financial hardship. Secondary school students who are eligible for the College Board Admissions Testing Program's fee waiver should have their school counselors attach a copy of that waiver form to the UMass Dartmouth application. Transfer and "adult" applicants should support a written fee waiver request with a letter from a social worker, financial aid officer, or member of the clergy.

Applicant Types

Two Main Types: Freshman and Transfer Applicants
Applicants who will have secondary school or equivalency diplomas and who have never attended degree-granting post-secondary educational institutions are considered for **freshman** admission. Also considered for freshman admission are applicants who have successfully completed fewer than 15 semester credits of college study.

All who have attended degree-granting post-secondary educational institutions and completed 15 or more credits are considered **transfer** applicants.

Whether applying for freshman or transfer admission, those who completed secondary school at least three years prior to entering the university are not required to submit standardized test scores for admission. Approximately one quarter of our entering students are in this "Returning Students" category, and the admissions staff is available to advise applicants with any special circumstances. Returning Student applicants who would like to discuss their educational plans are encouraged to telephone to arrange an appointment.

Freshman Applicants for Early Decision
Those freshman applicants whose secondary school grades and SAT scores are strong, and who have decided that UMass Dartmouth is their first choice, may apply for Early Decision. They benefit by receiving a decision before the number of available spaces begins to decline; in return, once accepted they must submit a non-refundable deposit and withdraw all applications to other colleges or universities. For Early Decision consideration, the completed application form, school records through the end of the junior year, and official SAT scores (taken before the senior year), must be received by November 15; decisions will be mailed by December 15.

Alternative Admission for Academically Disadvantaged New Freshmen
The university realizes its commitment to equal access through alternative admission programs. Although they may not have met entrance standards in prior schooling or as expressed in performance on standardized tests, students in these programs do achieve levels of academic accomplishment comparable to those of other students at the university. The university is committed to

the recruiting, counseling, and special academic services which have proven effective in enabling these students to achieve their full potential.

Academically disadvantaged students who have the ability, desire, and motivation to benefit from the university's programs, but who lack qualifications for admission, can apply to enter UMass Dartmouth through the alternative admissions program, called **College Now**. Applicants must be in-state residents, cannot exceed 24 transferable college credits, and must meet at least one of the following eligibility criteria: low income status, limited English background, first generation to attend college, disability, or ethnic student of color status. College Now is a fall admissions program only. The *Admissions Viewbook* gives detailed instructions, and the program is described elsewhere in this *Catalogue*.

Applicants may be unsure whether to apply for College Now or regular admission. The program staff will identify internally any applicants to either program who might be served better by admission to the other program. Inquiries from prospective applicants and counselors are welcomed.

Some applicants interested in a scientific or technical major who lack the secondary-level preparation may be offered participation in the **START Program** ("**S**teps **T**oward **A**bstract **R**easoning and **T**hinking"). Women and students of color, as groups traditionally under-represented in the scientific and technical fields, are eligible for this freshman-year program of special courses. Those who indicate a first-choice major in a science or engineering field are considered. The START curriculum helps its students acquire math, science, and reasoning skills in a special first year program of courses in mathematics, science concepts, and problem-solving.

Students admitted to these programs receive conditional admission to the university. To remain at the university after a stipulated trial period, they must satisfy conditions for academic performance and progress that are stated clearly in the offer of admission. They should expect to spend five years to complete the degree.

Early Admission for New Freshmen
Superior secondary school students sometimes exhaust the curricular offerings of their schools by the end of the junior year. These students may seek admission to UMass Dartmouth without a secondary school diploma. Their high school records and SAT scores must both be superior. They must also obtain from an official of their secondary school a written agreement that a secondary-level diploma will be granted upon satisfactory completion of one or two semesters of college work.

Dual Enrollment Program
UMass Dartmouth welcomes students from current secondary school interested in pursuing studies under the Commonwealth's Dual Enrollment program. This program, funded by special legislation, covers the cost for qualified Massachusetts public school students to take courses at the university. Students generally enroll in one or two courses, enrolling concurrently in high school and university courses. Students and parents should contact their high school guidance office or the Office of Admissions for assistance.

Secondary-Level Preparation: College-Preparatory Units
It is expected that an applicant's secondary school record will include at least 16 units of college preparatory courses:

- 4 units in English
- 2 units in social science including one in U.S. history
- 3 units in mathematics
- 2 units in the same foreign language
- 3 units in a science (two years with laboratory)
- 2 units of college-preparatory electives.

One or more of these requirements may be waived for applicants who present alternative indications of academic potential.

Secondary-Level Preparation: Program-Specific
Certain programs within the university require specific course backgrounds in addition to the general secondary-level requirements stated above. On the other hand, the Admissions Office will consider persons of extraordinary promise and talent for admission into a program even though they do not meet all of its prior-course requirements.

- *Chemistry, Computer Science, Engineering, Mathematics, Physics, and Textile Chemistry* require 3 and one-half units in college-preparatory mathematics which must include at least 2 units in algebra and one-half unit in trigonometry; and either (a) physics and chemistry, one of which must be a laboratory course, or (b) 3 units in natural science, one of which must be a laboratory course in physics or chemistry. Physics is strongly recommended for all engineering applicants.
- *Biology, Engineering Technology, Medical Laboratory Science, Nursing, and Textile Technology* require 3 units of college-preparatory mathematics, which must include 2 units of algebra; and 2 units of natural laboratory science. Physics is strongly recommended for all engineering technology applicants and chemistry for all nursing and Medical Laboratory Science applicants.

•
Business requires 3 units of college-preparatory mathematics, which must include 2 units of algebra.
•
Humanities and Social Sciences majors receive the degree of Bachelor of Arts. This degree requires that students satisfy a foreign language requirement. Therefore, we specifically consider the performance of our humanities and social sciences applicants in their secondary school foreign language courses.

College Board Scholastic Assessment Test (SAT) Results
The university uses SAT results as one means of assessing applicants' academic potential. The results of the ACT may be substituted.

The *Admissions Bulletin* gives full information about how to register and have score reports sent.

College Board Subject Achievement Tests are not required but the university urges applicants to submit these test results in appropriate subject matter areas. The achievement tests have significant predictive value, especially in the sciences, and can be a valuable source of data in the decision process.

Exceptions to the SAT Requirement
•
Applicants who have left high school three or more years ago (or who have completed 30 or more transferrable credits at a college or university) are not required to submit SAT scores.
•
Massachusetts residents who have been diagnosed as having a **learning disability** as determined by Chapter 766 or Chapter 344 may submit, *instead of* the SAT, proof of a diagnosis of a learning disability.

Applicants from a Second-Language Background
Sensitive to its location in an area of ethnic diversity, the university recognizes the barrier which the cultural and linguistic assumptions of standardized tests place between talented students for whom English is a second language and access to academic programs from which they can benefit. We will exempt students for whom English is a second language from those portions of our admissions standards which place them at a disadvantage.

Quality of Performance in Previous Schooling and on the SATs
For both freshman and transfer decisions, the evaluation of each applicant relies on an assessment of the *quality* of the applicant's previous school performance, test scores, abilities, and other aspects that are relevant to a prediction of probable success at the university. For each of the majors and curricula, somewhat different criteria are applied. The derivation of these criteria is the responsibility of the departments and colleges, in close cooperation with the representatives of the Admissions Office, who will implement the criteria in individual admissions decisions.

Information about the university's previous application decisions is routinely made available to secondary-school counselors. Applicants are encouraged to consult these officials at their institutions for advice about their prospects for admission to the university.

Some freshman applicants who are denied admission are advised by our admissions officials to pursue studies at a community college for one or more semesters and to reapply for admission. Subsequent admission is not automatic but conditional on good performance at the community college.

UMass Dartmouth welcomes transfer applications from students attending, or who have attended, public or private two- and four-year institutions. The university strives especially to facilitate the transfer of students from Massachusetts public community colleges through a variety of special contacts and communications. We accept the Commonwealth Transfer Compact.

Information about the university's previous application decisions is routinely made available to community college transfer officials. Applicants are encouraged to consult the officials at their institutions for advice about their prospects for admission to the university.

Some transfer applicants with few completed college credits who have been denied admission may be advised by our admissions officials to pursue studies at a community college for one or more semesters and then reapply for admission. Subsequent admission is not automatic but conditional on good performance at the community college.

Community College/UMass Dartmouth Joint Admission
The university offers access to a significant group of students through formal Joint Admission Agreements with all public community colleges in Massachusetts. The university also has agreements with the Community College of Rhode Island, Dean College, and Quincy College.

By the joint admission agreement, students entering a transfer degree program at the community college are admitted to UMass Dartmouth concurrently, being eligible to transfer after completion of the Associate's Degree, without making an additional application. Achievement of a 2.500 cumulative grade average, and remaining in the approved transfer program are the main conditions that the student must fulfill. The program involves active academic program planning and advisement by both college and university personnel, to assist students in meeting any requirements for the specific major program the student plans to enter at the university.

Prospective or current community college students should contact the UMass Dartmouth Admissions Office or an admissions officer or transfer counselor at the community college for further information.

Qualification for Admission: Transfer Applicants

In evaluating the qualifications of transfer applicants, procedures similar to those for freshman applicants are used in assessing the extent and levels of previous schooling and the quality of each applicant's performance. The exceptions are noted below. In general, secondary school records for transfer applicants who have completed relatively few college-level credits will be weighted more heavily than for those who have completed significant amounts of college-level work.

Records from Other Post-Secondary Institutions and Secondary-Level Records
Transfer students must arrange for certified transcripts to be sent to us from *all* colleges/universities that they have attended (including any for UMass Dartmouth's regular sessions and/or Division of Continuing Education). In addition, they must submit a listing of any courses in progress and course descriptions in some cases.

Transfer applicants who have completed 30 or more transferrable credits at a college or university are not required to submit secondary school records. Others must submit both secondary school and college transcripts. Those who completed high school through the GED program must send a copy of the GED certificate as well as the GED test scores in addition to the transcript of their last-attended school. Additional materials, such as teacher or counselor recommendations, are welcome. In specific cases, the admissions staff may ask for additional records.

College Board Scholastic Assessment Test (SAT) Results
Transfer applicants who present at least 30 transferrable college credits at the time of application are not required to submit College Board SAT results. Others are required to do so; most will submit the scores that they earned while they were in secondary school.

The *Admissions Viewbook* gives full information about how to register and to have score reports sent.

The Commonwealth Transfer Compact
The Transfer Compact offers special opportunities for students transferring from Massachusetts public community colleges to Massachusetts public colleges and universities. Specifically, the Compact is for students who will complete an associate's degree at the community college that is designed to prepare them to transfer to a four-year academic program. Students who have completed or will complete such a program are designated as Transfer Compact students by their community college.

UMass Dartmouth welcomes applications from Transfer Compact students with strong academic records. Among the advantages are a guaranteed acceptance of 60 credits in transfer, protections against having to repeat requirements (especially those for general education), and transferability of "D" grades. The complete text of the Transfer Compact is available at the community colleges, and a transfer counselor there should be able to provide guidance and explanations. It is also available from UMass Dartmouth, upon request.

We encourage those who are attending one of the Massachusetts public community colleges—even if they will not be Transfer Compact students—to plan their studies with eventual transfer to UMass Dartmouth in mind. The counseling or advising professionals at the student's community college can assist valuably in these plans.

Advanced Standing through Transfer Credits
The quality and quantity of academic work completed at previous higher education institutions determine the amount of transfer credit accepted at UMass Dartmouth and its applicability toward a degree. We accept college/university level credits taken at an accredited institution if the content is equivalent to a course or appropriate to a curriculum that we offer. Vocational or non-college level courses (such as physical activity, trade education, and high-school level courses) are not transferable.

The university's basic course and credit transfer policies are stated as follows. These policies apply unless a special transfer agreement or program imposes different conditions approved for that program. Special conditions apply for Interchange Transfer students, students entering under the Transfer Compact, and students in Study on Exchange status.

Transferred credits and course titles will be recorded on the transcript, without a grade designation; they will not be included in the grade point average that is earned here. Only credits for courses in which "C-" or higher grades were received will transfer.

At least 45 credits of course work must be completed at UMass Dartmouth. Other credits that may be applied to the degree include advanced placement, transfer credits, and, in the case of UMass Interchange Transfer students, credits and grades from another UMass campus. No more than 60 credits can be accepted from any combination of post-secondary 2-year institutions, advanced placement, or CLEP credits.

At least 30 credits of advanced and specialized courses must be completed (UMass Dartmouth courses numbered 300 or higher, excluding Experiential Learning). It is expected that students will earn most of their advanced and specialized course credits at UMass Dartmouth. Students may be granted permission by the appropriate chairperson and college dean to earn some of these credits at another institution so long as UMass Dartmouth major and minor requirements are met to their satisfaction thereby.

All courses accepted for transfer credit will count as UMass Dartmouth credits, but they will not necessarily count toward the specific degree requirements of the candidate's college and department. Some may be awarded as free electives only. Transcripts are evaluated by the Admission Office or the college into which the applicant is accepted.

Interchange Transfer, Permanent
Currently enrolled degree-seeking students at UMass Amherst, UMass Boston, or UMass Lowell who wish to change to be degree-seeking students at UMass Dartmouth may request Interchange Transfer. No application fee is required. To be eligible, the applicant must be in good academic standing and be currently enrolled with a load of 12 or more credits, have completed successfully at least 12 credits, and have at least a 2.000 cumulative grade point average.

Interchange transfer applicants must submit our application form and have an official copy of their *current* UMass transcript sent to us; if they meet the eligibility criteria, no other documents need to be sent.

Part-time, continuing-education, or non-degree "special students" at a UMass campus are considered regular applicants

more on next page

Transfer applicants
continued

and must submit all documentation and pay the application fee.

Please contact the UMass Dartmouth Office of Admissions for specific instructions.

Temporary Interchange Transfer
Temporary interchange students from the other campuses attend UMass Dartmouth for one or two semesters, applying UMass Dartmouth credits to the degree requirements of their home campus.

Before registering, temporary interchange students should receive from their home campus all necessary approvals regarding the applicability of UMass Dartmouth courses to the degree requirements of their home campus. Temporary interchange students receiving financial aid work through the financial aid office at their home campus.

Other Types of Credit

Applicants have opportunities for academic credit in addition to that provided by the transfer of credits from other institutions of higher learning.

AP examinations. Increasing numbers of students complete college-level studies while still in secondary school, through the Advanced Placement program of the College Board. We award advanced placement and/or college credit for AP examination scores of 3 or higher (with one exception: Psychology requires a 4 or 5) in most AP fields. Additional information is available at the Office of Admissions.

CLEP credit. The university has approved the use of the College Board College Level Examination Program (CLEP). This program uses test results to show that an individual has achieved college-level education in a certain academic field. We can award credit for CLEP Subject Examination scores at or above the fiftieth percentile, as reported on the CLEP score report. Some CLEP examinations may not receive credit, and the equivalency of these to UMass Dartmouth's courses will be determined by the academic department for that subject. Please consult the more detailed statement in the chapter on Special Learning Opportunites.

Military training courses. For military service school training, credit will be evaluated according to the recommendations of the *Guide to the Evaluation of Educational Experience in the Armed Services*, prepared by the American Council on Education. Degree candidates normally do not use these credits within the major field.

Challenge credits. Students transferring to a Business Administration or Nursing major, as well as to certain other fields, may be asked to verify proficiency in some subjects taken earlier, through challenge examinations. Some examinations are departmentally administered; the CLEP program, mentioned above, might also be used. Details will be provided by the departments.

Continuing Education degree offerings; prior learning credit. The Division of Continuing Education at UMass Dartmouth offers credit for validated prior learning to those who have become registered students. This program provides university academic credit for adult students who, through occupational or other experiences, have achieved the equivalent of college-level knowledge. Their prior learning is documented through a one-semester workshop and then evaluated for credit.

Credit courses taken from UMass Dartmouth's Division of Continuing Education are considered regular courses of the university. They appear on the transcript and the grades earned are reflected in the candidate's grade point average at the university.

Additional Application Requirements

The nature of some majors or curricula may make it desirable for additional information to be gathered systematically as a part of the application process so long as they do not contradict the admissions policies and procedures of the university. Three such requirements are currently in effect.

Multidisciplinary Studies
Applicants for admission to this individually-designed major must arrange a program of study with the program director before acceptance can be offered. This program is open to transfer applicants only.

Music Audition Requirement
Applicants for admission to the music major must audition in person in their principal applied area (either instrument or voice); the audition is a requirement for a completed application in music. Those who cannot audition in person must request permission to submit recordings.

Studio Art Portfolio
The faculty of the College of Visual and Performing Arts will review applicants' art portfolios as a part of the application process.

Complete instructions to help applicants meet these requirements are given in the *Admissions Viewbook.*

Nursing, RN Track
Fall matriculation in this program requires a student to have a nursing associate's degree or hospital diploma and a current Massachusetts RN license.

Regional Student Admission: Reduced Tuition Program

The New England Regional Student Program enables residents of Rhode Island, Connecticut, Maine, New Hampshire, and Vermont who apply for academic programs not available in their own public colleges and universities to receive special consideration for admission and to pay significantly reduced tuition at this university (in-state tuition plus 50%). Secondary school guidance counselors and college transfer officers can provide details about this program, or one can contact the New England Board of Higher Education, Boston, MA 01984, phone (617) 357-9620. (See chart below.) The following table indicates UMass Dartmouth undergraduate programs that are available to New England residents at reduced tuition charges:

Program	Eligible State Residents
Textile Chemistry	CT, ME, NH, RI, VT
Textile Science	CT, ME, NH, RI, VT
Portuguese	ME, NH, RI, VT
Textile Design	CT, ME, NH, RI, VT
Visual Design	ME, RI, VT
Art Education	RI

Other Applicant Types

International Applicants
(those needing to receive F-1 visas)
To the extent possible, international applicants should follow the instructions for either new freshman or transfer application, depending on their individual circumstances. International applicants will pay the out-of-state application fee and are not eligible for waivers of this fee. Upon acceptance and for as long as they attend the university, they must pay out-of-state tuition. International undergraduate students are not eligible to receive financial aid from the university.

International applicants must submit their application fees in U.S. currency. Checks not in U.S. currency will be returned and the application will not be processed until the fee has been resubmitted in U.S. currency.

These applicants must also meet all requirements of the United States Office of Immigration, in order to be issued the I-20 form. They must satisfy the conditions for admission to the university and become full-time, degree-seeking students.

In addition, international applicants whose native language is other than English must submit official scores from the Test of English as a Foreign Language (TOEFL), which is offered at regularly scheduled intervals throughout the world. Foreign nationals who have completed a year or more of study in United States institutions, or whose education abroad was conducted in institutions in which the primary language of instruction is English, are exempt from this requirement.

UMass Dartmouth Students Seeking Re-Admission
Any student who was previously admitted to UMass Dartmouth (day division) as a degree candidate and who registered for one or more semesters may request re-admission by contacting the Registrar's Office at (508) 999-8615.

Access to Courses, for Students Not Seeking a Degree (Non-Degree Students)
There are many reasons why a person might wish to take one or more courses at the university without seeking a degree. When feasible, therefore, we allow qualified students who are not UMass Dartmouth degree candidates to register for courses as special students. They may register only for courses for which they are qualified and in which space is available after the degree-seeking students have registered, and will be held to a strict limit in the total number of credits for which they may enroll as special students. Specific regulations for special students are given in the Academic Policies and Regulations section of this *Catalogue*.

Non-Degree Student registration may take place after the close of registration for degree students. An initial review of those seeking to register as undergraduate non-degree students is made in the Academic Advising Center. Applicants should be prepared to discuss their plans and to show appropriate records of prior schooling.

Visiting and Exchange Students
The university welcomes visiting students, who are matriculated at another university or college but wish to pursue their studies with us temporarily. We are especially interested in supporting students whose studies at another university will be enriched by a planned semester here, arranged between academic departments or faculty advisors.

The university also participates in formal as well as informal international student exchanges. A listing of formal exchange programs appears elsewhere in this catalogue. Contact the director of any of the exchange programs for additional information about the programs. Students accepted in exchange are issued paperwork authorizing them to receive a J-1 student visa, through the Office of Academic Affairs/ Graduate Studies (508-999-8024).

Students with Disabilities
Applicants are under no obligation to disclose a disability. The university will admit students who clearly demonstrate the ability to perform the academic work, without reference to learning or physical disability, as with all applicants.

Students with a physical or learning disability who are offered admission are encouraged to contact us about the support services we offer, to help them make their decision whether to enroll. An early meeting with Carole Johnson, Director of the Office of Disabled Student Services, is recommended; call (508) 999-8711. Students considering application may also call this office; the admission decision will be made independently of such preliminary inquiries.

Mid-Year Admissions
To the extent that space and fiscal resources permit, the university will admit qualified mid-year applicants. Special efforts will be made to ensure that spaces are available in appropriate spring semester classes for those admitted.

Readmission of Former Students
Readmission of former SMU/UMass Dartmouth students is handled by the Office of University Records (call 508-999-8614). A description of the readmission process appears below, in the chapter on Academic Regulations and Procedures.

Social Security Number
The university's data processing system uses nine-digit numbers to identify applicants and students. The university requests all applicants (except international students who lack one) to submit their social security numbers for this purpose. Those who do not wish to volunteer their numbers will receive the same consideration as those who do. Upon request at any time during the application process or as a continuing student, one may request and receive a special nine-digit identification number. Applicants who do submit their social security numbers can be assured that the university will respect and protect their privacy.

Graduate Admissions
Contact the Office of Graduate Studies for information, program descriptions, and application materials. Phone (508) 999-8604.

Expenses and Student Financial Services

Tuition and Fees

Undergraduate and graduate students at the university pay tuition and various fees. In addition, they will have costs for textbooks and other incidentals and for meals and housing. This section gives information about the structure of charges at the university, focusing specifically on charges to undergraduate students. It is intended to assist students and their families in their financial planning.

Detailed information on graduate student charges is available in the *Graduate Catalogue* (from the Office of Graduate Studies).

The university provides comprehensive financial aid and related services. Applicants and current students are invited to inquire about the aid and scholarship opportunities that are described later in this chapter.

The cost to students of an education at a public university remains one of the great bargains of our time. While there have been increases in recent years, the charges are still very affordable, especially when one considers the high quality of the education offered. Tuition and fees cover a part of the costs, but the remainder is made available by the taxpayers of the Commonwealth. The result is a creative partnership between the individual students and their families and the members of an enlightened democracy, which believes that the economic, political, and cultural success of the society depends on a well-educated citizenry.

Disclaimer:
Currency of Information

In preparing this *Catalogue*, we have made every effort to give the most up-to-date information possible. However, changes in tuition and fees may occur after the book has been printed. An exact schedule of all current charges is available from the Office of the Bursar, Foster Administration building, second floor, or the Student Enrollment Service Center, first floor.

All expenses are subject to change at the discretion of the Commonwealth, the Board of Higher Education, or the University. Similarly subject to change may be various policies associated with charges.

Payment Policy

Students may pay all tuition, fee, room, and board payments by mail, or at the Student Enrollment Services Center, first floor of the Foster Administration building, open weekdays from 8:00 a.m. to 5:00 p.m. Credit cards (Mastercard and Visa) are accepted.

All charges are due and payable at a date set by UMass Dartmouth (usually August 20 and January 5). Payments received after the due date indicated will be charged a late fee. The University mails bills to the student's permanent address; students must take care that they list an appropriate permanent address, for this reason.

Students are expected to keep their accounts current and to pay their financial obligations to the university. Students may not attend classes until all charges have been paid, or vouched for. In appropriate circumstances, the Bursar's Office may impose various restrictions in order to enforce payment of an obligation, including withholding of official transcripts and the diploma. The Vice Chancellor for Fiscal Affairs hears appeals of difficult cases.

This section explains the tuition and fee charges of the university.

Policies Affecting Charges

Residency: Massachusetts state residents pay a considerably reduced tuition and curriculum fee charge over that paid by out-of-state residents. Under the New England Board of Higher Education's Regional Student Program, residents of other states in New England are eligible for reduced out-of-state tuition for some academic programs not available in their own state. An accompanying table shows tuition and fee charges for the 1999-2000 academic year.

Prorating by credit load: Students pay the full amount for tuition and mandatory fees if taking twelve or more credits. Charges for those taking fewer than twelve credits are prorated evenly by the number of course credits. A table at the end of this chapter shows the per-credit/per-semester charges in effect for the 1999-2000 academic year.

Charges by type of study: Degree students, non-degree students, and students auditing a course or courses pay the same academic charges.

The Division of Continuing Education offers courses under a different structure of charges from that presented in this catalogue.

Tuition

Tuition charges are established annually by the Board of Higher Education.

Mandatory Fees

In addition to **tuition**, all students pay the following mandatory fees:

All students are assessed a **curriculum support fee**, which is calculated by a different rate depending on state residency. This fee supports the full program of academic and student services of the university.

The **general fee** supports the men's and women's athletic programs, student government, student publications, the student radio station, and various other student related activities. These fees are determined by the students themselves, through the student governance process.

Summary of Annual Expenses
1999-2000

Excluding Room and Board
(and *excluding* individual and onetime expenses)

	Undergraduates	Graduates
Massachusetts Residents		
Tuition	1417	2071
Curriculum Support Fee	2270	2446
General Fee	310	310
Campus Center Fee	100	100
Health Fee	32	32
Total	**4,129**	**4,959**

	Undergraduates	Graduates
Non-Massachusetts Residents		
Tuition	7845	7845
Curriculum Support Fee	3496	3496
General Fee	310	310
Campus Center Fee	100	100
Health Fee	32	32
Total	**11,783**	**11,783**

	Undergraduates	Graduates
Regional Student Program Non-Residents		
Tuition	2126	3107
Curriculum Support Fee	2883	2971
General Fee	310	310
Campus Center Fee	100	100
Health Fee	32	32
Total	**5,451**	**6,520**

Including Room and Board
(and *excluding* individual and onetime expenses)

	Undergraduates	Graduates
Massachusetts Residents		
Tuition	1417	2071
Curriculum Support Fee	2270	2446
General Fee	310	310
Campus Center Fee	100	100
Health Fee	32	32
Room and Board (12 meals)	**4992	*3292
Total	**9,121**	**8,251**

	Undergraduates	Graduates
Non-Massachusetts Residents		
Tuition	7845	7845
Curriculum Support Fee	3496	3496
General Fee	310	310
Campus Center Fee	100	100
Health Fee	32	32
Room and Board (12 meals)	**4992	*3292
Total	**16,775**	**15,075**

	Undergraduates	Graduates
Regional Student Program Non-Residents		
Tuition	2126	3107
Curriculum Support Fee	2883	2971
General Fee	310	310
Campus Center Fee	100	100
Health Fee	32	32
Room and Board (12 meals)	**4992	*3292
Total	**10,443**	**9,812**

All tuition and fee cost figures are based on enrollment in 12 or more credits each semester.

An additional cost of $600 for books and supplies is typical, although there is considerable variation for different subjects of study. Additional charges occur through college, department, or course-specific fees.

*Advanced undergraduate and graduate housing is in the Cedar Dell Student Apartments, the cost for which does not include meals.

**The 12-meal plan is the most commonly selected. See table of meal plans below for choices we offer.

The **campus center fee** is used to support the programming activities and general administrative expenses of the Campus Center. A Board of Governors, composed of 13 students, one alumnus, and two administrators, oversees the operation.

The **health fee** supports on-campus Health Services, available to all students.

The **MassPIRG fee**, imposed by student vote, is charged each semester. It supports the activities of the Massachusetts Public Interest Research Group, and is waivable upon request.

Health Insurance
Students enrolled in a 3/4 time load or higher (9 credits for undergraduates and 7 credits for graduate students) are required by state law to be covered by appropriate health insurance. The university provides this insurance and charges a health insurance fee to students, unless they are already covered by an appropriate insurance program. This fee is waived if the student presents proof of appropriate insurance coverage, to the Bursar's Office or Student Enrollment Service Center.

The fee covers the cost of enrollment in a program for group health insurance coverage that has been negotiated by the university. Students enrolling in this plan receive full disclosure of the benefits they will receive. Detailed information is available at the Student Health Office. Students enrolled in less than a 3/4-time load are not eligible for this insurance.

Certain classes of international students may be required to have insurance coverage different from or additional to that of the regular health insurance plan. The university makes available to students plans providing this coverage. Again, you may consult the Student Health Office for details.

New England Regional Student Program

The university is a member of the New England Regional Student Program. Under this program students from other New England states may receive tuition benefits if a similar program is not available in their home state.

Eligible programs for 1999-2000 and the schedule of charges are given in tables accompanying this chapter.

For more information, contact the Office of the Regional Student Program, New England Board of Higher Education, 45 Temple Place, Boston, MA 02111; phone 617 357-9620.

Tuition and Fee Waivers for Special Groups

Those in certain classifications may receive waivers of tuition or fees, some of which are listed here. If you believe you are a member of a group eligible for a waiver, please consult the Student Enrollment Service Center or Bursar's Office.

Students **sixty years of age or over** who are Massachusetts residents are exempt from tuition and mandatory fee charges. Applications for tuition and fee exemption may be obtained from the Bursar's Office or Student Enrollment Service Center.

Some categories of **state workers** may receive waivers of tuition charges, but not of fees. Some categories of **veterans** may receive waivers of tuition charges, but not of fees.

Program- and Course-Specific Fees

These fee amounts are shown in an accompanying table.

Course-Specific Fees ("S/LA Fees")
Students registered in certain courses are required to pay special course fees, which will usually range from $15 to $60 but are higher for a few courses. These fees directly benefit the students in the class for which they have paid a fee. These fees, for example, provide supplies and equipment for scientific laboratories and supplies for the art studios.

Individualized music classes charge higher fees, which go directly to support the cost of instruction.

Students registered in clinical nursing courses must have liability insurance. This is a course-related cost, although it is not administered through a university fee.

Engineering Equipment Fee
Students enrolled in the College of Engineering will be charged a special fee each semester, to assist with the costs of laboratory equipment.

Nursing Instructional Fee
Students enrolled in the College of Nursing will be charged a special instructional fee each semester.

Business Administration Fee
Students enrolled in the College of Business will be charged a special fee each semester, to assist with the costs of equipment.

One-Time Fees

These fee amounts are shown in an accompanying table.

Application Fee
Applicants are charged a nonrefundable, non-waivable application fee. Massachusetts and Non-Massachusetts residents pay different application amounts.

Admissions Deposit
Students who have been accepted for admission to the university must reserve a space in the entering class by submitting a matriculation fee. Admitted applicants are given until a stated deadline to submit the deposit, after which date the space reserved for them will be given to another candidate. Prospective students who have a hardship associated with this deadline may discuss that situation with the Director of Admissions. Complete instructions are given along with the letter of admission. This fee will be applied towards tuition, upon registration. Complete instructions are given along with the letter of admission. Similarly, a housing reservation deposit is charged. This fee will be applied to the student's housing bill, upon registration.

Orientation Fee
An Orientation Fee is paid by all incoming freshmen and transfer students to defray the expenses of the summer New Student Orientation Program. Freshmen attend a two-day, overnight program, and transfer students attend a day-long program.

Readmission Application Fee
Applicants for readmission are charged a readmission fee. The fee, which covers costs associated with processing the application, is to be paid before the student's file is forwarded to the department for consideration. Policies regarding readmission and leave of absence are covered in the chapter on Academic Regulations and Procedures.

Graduation Fee
Students pay this fee in their last semester prior to receiving a degree. The bulk of this fee goes to help defray commencement costs. An additional portion provides a one-year membership in the Alumni Association. A refund or charge adjustment of the Alumni Association membership fee portion may be obtained by those not wishing to participate, by contacting the Office of the Bursar or Student Enrollment Service Center.

Books and Supplies
Costs for books and supplies vary with the habits of the individual as well as with the nature of each student's academic program. The following information may provide a general guideline, for planning.

$600 per year for books and supplies is an estimated or typical amount. Generally, books cost more in the scientific and technical fields. First year Engineering students have additional expenses for engineering drawing equipment and related materials. Students in the College of Visual and Performing Arts will incur some additional expenses for art supplies.

Students registered in clinical nursing courses have an additional expense for uniforms and for insurance. They are also responsible for providing their own transportation for clinical practice.

Medical Laboratory Science seniors have additional expenses for uniforms and lab coats, malpractice insurance, and commuting to participating hospitals.

Payment Financing

The university makes available the services of two private financing programs to assist those students who wish to spread their tuition and fee payments out rather than paying the entire amount at the beginning of the term. Information and application forms are available from the Student Enrollment Service Center and Bursar's Office.

Residency Requirements for Tuition and Curriculum Support Fee Charges

Massachusetts "resident students" pay the instate tuition and fee charges; others pay out-of-state charges or—in certain programs only—the New England Regional Student Program special rates. The full regulations are included in an appendix at the end of this chapter; what follows here is a brief overview.

To be deemed a Massachusetts resident, one must have had a legal domicile in the state for at least one year before the commencement of the academic semester, residing in the state for purposes other than attending an educational institution (or one's parents, if one is financially dependent on them). Those who do not meet the conditions are considered out-of-state or nonresident students. A student at a certain degree level, e.g., under-graduate, may retain instate residency classification if relocating to an out-of-state residence, provided s/he remains in continuous attendance at the institution, until attainment of the degree for which enrolled.

Questions on residency policies may be directed to the office handling one's admission or readmission (such as Undergraduate Admissions, Graduate Studies, or the University Registrar).

Students may request reconsideration of a residency determination because of new information, the interpretation of policy, or a change in their status. Students should contact Colleen Wetterland, Office of the University Registrar, at 508 999-8614. They may be asked to submit a residency reclassification form and appropriate documentation. Appeals of contested cases are heard by a campus Residency Appeal Committee, which makes the final residency determination.

Any international student who undertakes study here under a nonresident temporary student visa must pay out-of-state application and tuition/fee charges. This remains in force for the duration of the student's attendance at the University of Massachusetts Dartmouth for as long as the individual remains an international student on a nonresident visa.

Room and Board Charges

Students of the university who take advantage of the on-campus residence program are presented with a number of plans, the costs for which are listed here. Specifics of what each plan provides are available from the Office of Housing and Residential Life, and are summarized in the chapter, The Campus Experience.

Annual Campus Housing Charges
(1999-2000 charges shown)

Double room 19 meal plan	$5,317
Double room 16 meal flex plan	$5,244
Double room 12 meal flex plan	$4,992
Double room 7 meal flex plan	$4,895
Single room, additional	$150
Cedar Dell Apartment Single room charge	$3,292
Telephone charge (mandatory)	$140
Housing reservation deposit	$100

Further details and instructions for reserving a space are mailed to every applicant who has been accepted for housing.

Refunds — Withdrawal from School

A student who registers and commences studies but then withdraws officially from UMass Dartmouth for any reason during an academic semester will be granted a refund according to the refund schedule given on the following page.

A student who remits, in advance, a payment of tuition and fees but then does not subsequently register and attend will be given full refund of tuition and fees.

All refunds are based on official withdrawal notices as dated and processed by the Office of the University Registrar and then forwarded to the Bursar's Office.

Charges Per Credit per Semester
1999-2000 Rates

At 12 credits the charge will be at a maximum. Credits above 12 are added at no additional charge. The charges shown here do not include non-mandatory fees, course/college fees, housing, books/supplies, or personal expenses.

Health Insurance, for students in a 3/4 or higher load, is additional to the charges shown here.

	Undergraduates	Graduates
Massachusetts Residents		
Tuition	59.04	86.29
Curriculum Support Fee	94.58	101.92
General Fee	12.92	12.92
Campus Center Fee	4.17	4.17
Health Fee	1.33	1.33
Total	**172.04**	**206.63**
Non-Massachusetts Residents		
Tuition	326.88	326.88
Curriculum Support Fee	145.67	145.67
General Fee	12.92	12.92
Campus Center Fee	4.17	4.17
Health Fee	1.33	1.33
Total	**490.97**	**490.97**
Regional Student Program		
Tuition	88.56	129.44
Curriculum Support Fee	120.13	123.79
General Fee	12.92	12.92
Campus Center Fee	4.17	4.17
Health Fee	1.33	1.33
Total	**227.11**	**271.65**

One-Time and Individual Fees
1999-2000 Rates

Application Fee	
Massachusetts residents	$20
Non-Massachusetts residents	$40
Course-specific Fees ("S/LA Fees")	
variable, some courses — per 3-credit course	$12 - $60
Admissions Deposit	
(applied toward tuition upon matriculation)	$100
Orientation Fee	
New freshmen	$150
New transfers	$60
Engineering Equipment Fee	$150 /semester
Nursing Instructional Fee	$160 /semester
Business Administration Fee	$30 /semester
Program Continuation Fee	$65 /semester
Graduation Fee	
For commencement costs	$70
Alumni Association one-year membership (refundable)	$20
Health Insurance Plan	$624/year

Refund Schedule (effective Fall 1998)

Percentage and type of refund, upon Official Withdrawal from UMass Dartmouth

Prior to first day and through to end of publicized drop/add period each semester	100% tuition and all fees
During second week (next 5 class days)	90% tuition and curriculum support fee
During third week (next 5 class days)	70% tuition and curriculum support fee
During fourth week (next 5 class days)	50% tuition and curriculum support fee
After fourth week	No refund of charges

Refund of charges for on-campus meals and housing is governed by the terms of the housing contract.

"Official Withdrawal" is defined in the chapter on Academic Regulations and Procedures, applying to the regular courses of the university. The Division of Continuing Education has a separate fee schedule, billing process, and refund schedule.

Onetime fees, such as the application or orientation fees, are not refunded.

Undergraduate Programs Eligible for Regional Student Program Tuition Reduction (1999-2000)

Program	Eligible State Residents
Textile Chemistry	CT, ME, NH, RI, VT
Textile Science	CT, ME, NH, RI, VT
Portuguese	ME, NH, RI, VT
Textile Design	CT, ME, NH, RI, VT
Visual Design	ME, RI, VT
Art Education	RI

Financial Aid Services

Nearly all students are eligible for some type of financial assistance.

Financial Aid Services is located at 105 Foster Administration Building and welcomes inquiries from current and prospective students and their families. They conduct many financial aid presentations both on and off-campus each year to assist university applicants and the community.

If students experience unforeseen financial difficulties at any time or have questions concerning financial aid, they should contact the Student Enrollment Services Center of Financial Aid Services, Foster Administration Building, x8632.

UMass Dartmouth awards financial aid based upon federal, state, and institutional guidelines, and determines eligibility by using the *Free Application for Federal Student Aid* (FAFSA). Financial assistance may be available in the form of need-based grants, scholarships, loans and work-study programs. Non need-based loans are also available to students and families who do not qualify for need-based aid.

The eligibility for a need-based financial aid award is based on each individual applicant's financial need, which is determined in the financial aid application process. Both the amount and the type of aid awarded are related to the financial needs and circumstances of the individual and the timeliness of the FAFSA form.

Financial Aid Services is committed to helping applicants and students with all phases of the aid application and award process. The office provides much guidance in helping applicants through the steps in the process; however, it is the responsibility of the student who desires aid to obtain the necessary forms and instructions from Financial Aid Services and to fill out all required forms accurately and to supply all necessary information and to meet all applicable deadlines.

Application Process
Application for all need-based aid programs is made by completing the Free Application for Federal Student Aid (FAFSA). Certain non-need parent and student loans also require submission of the FAFSA.

Early application is strongly encouraged. **The priority filing date is for FAFSA materials to be received at the Federal processor by March 1st** before the year for which aid is sought, with UMass Dartmouth included in the list of schools. The UMass Dartmouth Title IV school code is **002210**. We recommend mailing your FAFSA by February 15th to ensure priority consideration.

Students must be admitted to a degree program before eligibility can be determined for financial aid. Graduate students and second-degree students are not eligible for federal or state grant programs.

Students who receive need-based financial assistance are subject to academic progress and performance requirements in the continuation of their studies. These standards are outlined in the Academic Regulations and Procedures section of this *Catalogue*, and full information about the process and its conditions is available in Financial Aid Services.

Tuition Reduction Program
The tuition reduction program offsets raises in tuition by the awarding of tuition reductions to financially-needy undergraduate students (except those in Continuing Studies) who are legal residents of Massachusetts and U.S. citizens or eligible non-citizens as defined by the federal guidelines for financial aid eligibility. These awards are made in increments up to a maximum of the full cost of resident tuition and are awarded by Financial Aid Services. Eligibility is determined by demonstrated financial need on the same basis and the same application procedures and deadlines as with other University-administered need-based aid programs.

Scholarships
The university offers many private and foundation scholarships, which originate from a variety of sources. A listing of the scholarship opportunities is accessible from the UMass Dartmouth WWW home page. Included are both merit-based and need-based scholarships, which are often targeted for particular types of students.

In addition, other merit-based scholarships are offered competitively to entering freshman and transfer students on the basis of academic achievement and evidence of intellectual and personal creativity. Information about this program is available from the Office of Admissions.

Student Employment

Students at the university can contribute toward their college expenses and gain valuable work experience through many varieties of student employment. Many students have work allotted through federal college work-study awarded as a part of financial aid. In addition, however, many others find campus jobs regardless of whether they have demonstrated a financial need or received an aid award. Furthermore, others seek part-time or summer work off campus, and the university assists them in learning of such opportunities.

Students seeking employment, both those awarded federal work-study and those seeking other forms of work, should visit the Career Resources Center to learn about work opportunities and receive job assignments.

Students who are awarded federal work-study through the financial aid process receive the necessary support to obtain their actual work-study assignment from Career Resources. Information sessions held during the summer and into the fall semester give the information students need to make the most of their college work-study experience. Many kinds of on-campus work-study assignments are available, and off-campus work-study is also available through the Community Service Learning Program.

Non-work-study employment is also found at Career Resources. The Student Employment Directory lists positions with various campus organizations and departments, and the office staff assists students in matching their interests and qualifications to the available positions. The office also maintains a listing of off-campus part-time work and summer jobs, posting vacancies on bulletin boards in the office and, along with full-time opportunities, publishing announcements in the weekly JobTrakker Bulletin.

Regulations Governing Residency for Tuition Purposes

These rules and regulations, approved by the University's Board of Trustees, are current as of publication. They apply to the classification of students at the University of Massachusetts as Massachusetts or non-Massachusetts students for tuition and fee purposes. They apply both to degree and non-degree students.

Part 1. Definitions

1.1 "Academic period" shall mean a term or semester in an academic year or a summer session, as prescribed by the Board of Trustees or under their authority.

1.2 "Continuous attendance" shall mean enrollment at the University for the normal academic year in each calendar year, or the appropriate portion or portions of such academic year as prescribed by the Board of Trustees or under their authority.

1.3 "Emancipated person," for the purposes of residency classification for tuition, shall mean a person who has attained the age of 18 years *and* is financially independent of his or her parents, or if under 18 years of age (a) whose parents have entirely surrendered the right to the care, custody, and earnings of such person and who no lon-ger are under any legal obligation to support or maintain such person; or (b) a person who is leg-ally married, or (c) a person who has no parent. If none of the aforesaid definitions apply, said per-son shall be deemed an "unemancipated person."

1.4 "Parent" shall mean

a) the person's father and mother, jointly;
b) if the person's father is deceased the person's mother; if the person's mother is deceased, the person's father;
c) if a legal guardian has been appointed by a court having jurisdiction, the legal guardian;
d) if neither the father nor mother is living and no legal guardian has been appointed, the person who then stands *in loco parentis* to the person;
e) if the father and mother are divorced, separated or unmarried, the parent who has been awarded legal custody of the person; or if legal custody has not been awarded, the parent with whom the person lives. With respect to any adopted student, the word "adoptive" should be inserted before the words "father" and "mother" wherever used.

1.5 "Reside," "residency," or "resident" shall mean "domicile," i.e., a person's true, fixed and permanent home or place of habitation, where he or she intends to remain permanently.

Part II. Classification

2.1 For the purpose of assessing tuition and fees, each student shall be classified as a "Massachusetts resident" or a "non-Massachusetts resident." A person shall be classified as a Massachusetts resident if he or she (or the parent of an unemancipated student) shall have resided in the Commonwealth of Massachusetts for purposes other than attending an educational institution for twelve months immediately preceding the student's entry or reentry as a student.

Physical presence for this entire twelve-month period need not be required as long as the conduct of an individual, taken in total, manifests an intention to make Massachusetts his or her permanent dwelling place.

Part III. Determination of Residency

3.1 Proof of Residency

a) Each case will be decided on the basis of all facts submitted with qualitative rather than quantitative emphasis. A number of factors is required for residency to determine the intention of the person to maintain permanent residence in Massachusetts. No single index is decisive. The burden of proof rests on the student seeking classification as a Massachusetts resident.

b) The following shall be primary indicia of residency:

1) For an unemancipated person, the residency of parents, having custody, within Massachusetts;
2) Certified copies of federal and state income tax returns;
3) Permanent employment in a position not normally filled by a student;
4) Reliance on Massachusetts sources for financial support;
5) Former residency in Massachusetts and maintenance of significant connections there while absent.

c) The following shall be secondary indicia of residence, to be considered of less weight than the indicia listed above in subsection b):

1) Continuous physical presence in Massachusetts during periods when not an enrolled student;
2) Military home of record;
3) All other material of whatever kind or source which may have a bearing ondetermining residency.

3.2 Proof of Emancipation. A student asserting that he or she is an emancipated person shall furnish evidence to support such assertion. Such evidence may include:

a) Birth certificate or any other legal document that shows place and date of birth;
b) Legal guardianship papers — court appointment and termination must be submitted;
c) Statements of the person, his or her parent(s), guardian(s), or others certifying no financial support;
d) Certified copies of federal and state income tax returns filed by the person and his or her parent(s);
e) Where none of the foregoing can be provided an affidavit of the emancipated person in explanation thereof and stating fully the grounds supporting the claim of emancipation.

3.3 Presumptions, etc.

a) Residency is not acquired by mere physical presence in Massachusetts while the person is enrolled in an institution of higher education. (See Section 2.1)

b) A person having his or her residency elsewhere than in Massachusetts shall not be eligible for classification as a Massachusetts resident for tuition purposes except as herein provided.

1) Any person who is registered at the University as a Massachusetts resident shall be eligible for continued classification as a Massachusetts resident for tuition purposes (until attainment of the degree for which he or she is enrolled) during continuous attendance at the institution.
2) The spouse of any person who is classified or is eligible for classification as "Massachusetts resident" is likewise eligible for classification as a "Massachusetts resident." This provision will not apply in the case of a spouse in the United States on a non-immigrant visa.
3) A person who is an immigrant/permanent resident of the United States (or has applied for such status) is eligible to be considered for Massachusetts residency for tuition purposes provided that he/she meets the same requirements for establishing residency in Massachusetts as are required of a United States citizen. Non-citizens who are in (or who have applied for) refugee/asylum status are likewise eligible to be considered for Massachusetts residency for tuition purposes provided that he/she meets the same requirements for establishing residency in Massachusetts as are required of a United States citizen. All non-citizens must provide appropriate documentation to verify their status with the United States Immigration and Naturalization Service.
4) Those students whose higher educational pursuits are funded by the Department of Welfare, the Massachusetts Rehabilitation Department, or any of the other Commonwealth of Massachusetts public assistance programs.

c) A person does not gain or lose instate status solely by reason of his or her presence in any state or country while a member of the Armed Forces of the United States.

d) For the purposes of this policy the following persons shall be presumed to be Massachusetts residents:

1) A member of the Armed Forces of the United States who is stationed in Massachusetts on active duty pursuant to military orders, his or her spouse and dependent students.
2) Full-time faculty, professional staff, and classified staff employees of the university of Massachusetts system and their spouses and dependent students.

Part IV. Appeals

4.1 Any student or applicant who is unwilling to accept the initial ruling relative to his or her residency classification, or who wishes to seek reclassification, may file a "Residency Reclassification Form."

4.2 Any student or applicant who is unwilling to accept the ruling relative to his or her residency reclassification may submit an appeal through the appeal process established by the campus at which that student or applicant seeks reclassification. The decision on appeal is final and may not be appealed further.

4.3 In any case where the Admissions Office is unable to make an initial determination based on the evidence submitted, the applicant may be required to submit a "Residency Reclassification Form" to the admission office for their review before being finally classified as a resident or a nonresident.

Part V. Penalties

Misrepresentation in or omission from any evidence submitted with respect to any fact, which if correctly or completely stated would be grounds to deny classification as a Massachusetts resident, shall be cause for exclusion or expulsion from or other disciplinary action by the University.

The Campus Experience: Services and Support

Academic Enrichment and Academic Support

Help with Academic Plans and Goals
Students are aided in their adjustment to academic life and in their decision making processes through regular conferences with a designated faculty advisor. Each college has an academic advising network for its students, and the campus-wide Academic Advising Center serves students in transition.

The key activities of advising are to help each student formulate academic and career goals, select courses that will meet those goals, and monitor progress toward fulfilling degree requirements. Students also consult their advisors about academic problems and concerns, to arrange special learning opportunities, or for advice about further study or careers. Students meet with their advisors at least every semester, to select and obtain approval of their courses for the upcoming semester.

For more detail and official guidelines, please refer to the "Academic Advising" section in the chapter on Academic Policies and Procedures.

Academic Advising Center
The Academic Advising Center, located on the ground floor of the administration building, is open Monday through Friday throughout the year. Students may consult the faculty advisors of the Center on a walk-in basis, or by appointment when classes are not in session. The Center assists students with special issues or concerns, and provides guidance to those considering changing a major or who need assistance with the university's advising system. It also is the site of academic advising for Liberal Arts students, who have not yet selected a specific major, and for other students as well. The Center is staffed by faculty members and has a full-time Director appointed from the faculty.

International Study and Travel
Students interested in pursuing a course of study and travel in another country may obtain assistance in academic planning from The Academic Advising Center. Information about foreign and domestic colleges and universities offering these programs is available from the Student Life Office, Foster Administration Building, room 209. Students may remain registered as continuing students of this university while they pursue studies abroad, through a Withdrawn on Exchange status.

University Honors Program
University-wide honors activities are available to students who demonstrate high academic achievement. This program is described more fully in the Interdisciplinary and Special Programs section of this catalogue.

Pre-Medical, Pre-Law, and Pre-MBA Advising
Students who wish to prepare for admission into graduate schools of medicine, law, or business have many options open to them. By the judicious use of electives, any student within the College of Arts and Sciences can satisfy the course requirements of most medical, law, or business schools. Any student interested in pursuing one of these careers should see one of the following advisors early in his or her academic career.

- Medicine: Prof. Alan Bates, Chemistry Department; Prof. Donald Mulcare, Biology Department; Prof. Eileen Carreiro-Lewandowski, Medical Laboratory Science Department. The Biology and Chemistry Departments both offer formally-structured pre-medical options, but pre-med advising is available to students, in any major, who are aiming at a medical career.
- Law: Prof. Kevin Hargreaves, History Department.
- Business: Prof. David Berger, Economics Department.

Office of Enrollment Management
This office, headed by the Assistant Chancellor for Enrollment Management, is responsible for the leadership and administration of programs and services that enhance the recruitment and retention of students. It promotes and coordinates efforts to provide quality learning experiences and services that meet the needs of students through continuous improvement, data analysis, and collaborative initiatives. The office oversees the Admissions Office, Financial Aid Office, Student Enrollment Services Center, Academic Advising Center, and Cooperative Learning Center.

Student Enrollment Services Center
Students receive comprehensive enrollment and financial services at the Student Enrollment Services Center.

All in one location, students can
- pay tuition, fees, and housing charges
- check the status of financial aid (and get help understanding it)
- register for classes; add and drop classes; etc.
- check their billing account (and get help understanding it)
- get a copy of class schedule
- check transcript or obtain or order transcripts
- obtain or submit financial aid forms or documents
- obtain enrollment certifications for health insurance or other purposes
- and most importantly, obtain advice and assistance!

By integrating financial and registration services in one location, the university
- assists students with the interrelationships between their aid, registration, and account status
- eliminates the necessity to go to three different offices
- refers special problems to the best place for immediate, quality assistance.

The Student Enrollment Services Center counter is located in the Foster Administration Building Lobby.

Academic Resource Center
The Academic Resource Center (ARC) is an academic support service which provides peer tutoring, small group review sessions, workshops, and handouts for all students, as well as support services for disabled students. The goal of the ARC is to help students achieve academic excellence. The ARC is organized into four centers—the Disabled Student Services, Math and Business Center, Science and Engineering Center, and Writing and Reading Center. Each center has a professional director and is staffed by qualified, caring student tutors and aides, who have been recommended by faculty.

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Disabled Student Services, Group I-016, x8711
Support for learning and physically disabled students, including mobility assistance, note takers, information for Talking Books, advocacy.

•
Math and Business, Group I-010, x8716
Tutoring in algebra, calculus, accounting, economics, management science, elementary statistics.
•
Science and Engineering, Group II, 217B, x8710
Tutoring in biology, chemistry, physics, nursing, civil, electrical, computer, and mechanical engineering.
•
Writing/Reading Center, Group I-220, x8710
Tutoring in English, history, philosophy, political science, psychology, sociology, English as a second language, essay writing, research papers, business and technical communication, reading, and study skills.
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In addition, through a federal Student Support Services grant, the following services are available to eligible students: mentors, study groups and study partners, assistance in preparing applications for graduate school, individualized needs assessments, cultural activities, and academic enrichment activities.

University Library
The University Library supports and supplements all programs of instruction and research at the university. By cooperating with the faculty in developing the resources which meet curriculum requirements and by remaining sensitive to the needs of students, faculty, and the general public, the library is constantly expanding and adapting its collection and services.

In addition to a book collection of over 350,000 volumes, the library subscribes to more than 2,000 periodicals and has over 150,000 U.S. government publications and more than 8,000 non-print items. All these materials are accessible through an on-line catalog available in the library and accessible from anywhere via the campus network and Internet. To help students use these and other resources, the library provides one-on-one instruction with student interns and individualized research assistance with professional librarians.

The university identification card entitles students and faculty to use and borrow library materials from any public college or university in the state as well as a number of local libraries. In addition, a large interlibrary loan network and delivery system makes millions of volumes available to library users. UMass Dartmouth is also part of the Boston Library Consortium, an association of the major college and research libraries in Massachusetts.

The library is the largest building on campus, has seating for 1,200 people, and is open seven days a week during The Academic year.

By providing information and teaching the skills for identifying and evaluating information, the library contributes vitally to formal education and lifelong learning.

For more information about the library, visit its web site at http://www.lib.umassd.edu

Computing on Campus
Computing and information technology are integral to the curriculum at this university. Faculty have developed creative and effective ways for students to learn by using computers.

At UMass Dartmouth, the many computing and information technology functions and services are administered through Computing and Information Technology Services (CITS), headed by Dr. Robert W. Green, Associate Provost for Computer and Information Technology. A team approach provides unified services in the areas of computing support and microcomputer maintenance, cluster/classroom operations and support, information systems, Internet development, microcomputer maintenance and repair, networking and systems, and operations and access. For questions or information, please call the CITS Customer Support Center (508) 999-8790 or send e-mail to cscenter@umassd.edu

The backbone of institutional computing at UMass Dartmouth is the UMDNet, that allows access to a number of campus computing activities. These include e-mail, the library system, the campus web site, CyberEd, distance learning, and Internet access. Our e-mail runs on the DEC Alpha computer cluster with an Open VMS operating system. It is accessible from every part of the campus including student housing via direct Ethernet communications. The ALPHA cluster has a variety of software available including electronic mail, newsreader, programming languages such as Basic, Fortran, Pascal, C++, Cobol, and SPSS, a statistical package. UMDNet is a part of the Internet global network making possible communication with and access to off-campus locations. It can be used to send electronic mail to persons at other institutions, to participate in discussion groups, and to browse the World Wide Web. All students receive accounts to use UMDNet services such as e-mail.

All rooms in the residence halls are wired to provide Ethernet service to UMDNet from each room. Students may request access to residential networking, ResNet, by visiting the CITS website at www.3umassd.edu/rcc/ and may consult a student Residential Computing Consultant for help. The student's equipment must meet minimum configurations. For those who live off campus, there are a number of Internet Service Providers that will connect students via a modem to the Internet and UMass Dartmouth.

E-mail accounts are generated for all students. There are currently no constraints on CPU time or connect time; disk quota is limited for all users.

CITS uses a listserv approach through UMDAnnounce, UMDNotify, and UMDAlert to provide campus announ-cements, important information, and emergency information respectively. At the beginning of each semester all faculty, staff, and students are subscribed; those wishing to unsubscribe from UMDAnnounce may do so.

CITS provides **access, user support, and training** for students, faculty , and staff for the following:
•
Help Desk. CITS has standardized on two computers, Apple Macintosh and PC Compatibles running Windows 95. CITS provides help with a host of standard software applications—by telephone (508 999-8884), e-mail (citshelp@umassd.edu), or in person (Help Desk in the Library basement).
•
Documentation. CITS provides free printed documentation in the public access computing facilities and distributes *The Student Guide to Computing* widely.
•
Training. CITS offers New User Sessions for basic skills and operating many applications and systems. One may find the semester schedule of the sessions by calling our Help Desk or on our website.

CITS operates and maintains four general access **computer labs** to support students, faculty, and staff. Students in all majors have access during all hours of operation.

Faculty and staff may use the facilities as individuals, and may arrange to schedule special sessions in three of the four labs.

•
Group I-216—Macintosh lab, including Macintosh software MS Word, MS Excel, MS Powerpoint, SPSS, and Netscape Communicator.

•
Group I-221—Pentium lab, including Windows software MS Word, MS Excel, MS Access, MS Powerpoint, SPSS, and Netscape Communicator.

•
Dion 109—Macintosh and PC lab, including the above software and Statview and Filemaker Pro.

•
Library Computer Lab, including all the above software.

CITS also helps operate four **computer classrooms**, which are used by faculty in teaching many classes and also provide hours of access for inde-pendent student use. Classrooms are located in the Library basement, Group II-210, Dion 303, and Dion 315. Additional sites are under development, including a classroom dedicated to teaching General Education computing and information skills, through students' English 101/102 classes.

CITS also supports **distance learning** activities. CITS works closely with the College of Engineering to support the Dion 315 PictureTel and the Group VI-255 MPEG2 video conferencing facilities. Additional sites are under development. Furthermore, CITS encourages faculty to build highly interactive Websites to support their class activities, conducting workshops in the use of the new and innovative "Coursebuilder" system that has been developed at UMass Dartmouth.

For additional information about CITS, visit the university's web site at *www.umassd.edu*

College Now
College Now is an admissions and support program for students whose educational achievement has been hampered as a result of social, educational or economic inequities. From the moment of admission to graduation, students enrolled through the College Now Program are provided with essential supportive services. College Now freshman students participate in an individualized Fall academic program in which they receive assistance and guidance in developing and sharpening those basic academic skills and attributes that are vital to their success at the university. Each College Now student is assigned a counselor who, during the student's five years to graduation, will offer assistance with goal setting, academic achievement, and short- and long-range planning.

See the Admissions section of this *Catalogue* for information about admission to the university through the College Now program.

Office of University Records and the Registrar
Located on the first floor of the Foster Administration building, this office serves the instructional program by preparing, retaining, and making accessible all records pertaining to the academic programs and the academic work of the individual students of the university. Here students register for classes and receive the records of their progress and achievement; when they graduate, all students' academic records are made available through a transcript-production service. Here the schedules of the instructional program are prepared each semester for the academic departments.

Beyond such services, the Office maintains the record of the university's academic affairs through the computerized Student Information System and monitors and enforces many of The Academic procedures and policies of the university, as described in the Academic Policies and Procedures section of this *Catalogue*.

Veterans' Affairs Office
VA programs are approved for benefits available under specified chapters of Title 38, U.S. Code. Eligible students must obtain an application from the Office of Veterans' Affairs on campus, or from their regional Veterans Administration Office. The Veterans Administration will issue a Certificate of Eligibility which should be presented to the Office of Veterans' Affairs for certification of enrollment. It is the veteran students' responsibility to notify the Veterans' Affairs Office of any changes in course credit load or addresses, in a timely manner.

Veterans tuition waivers are available for those individuals who are considered Veterans under M.G.L. Chapter 4, Section 7 (43), including WWI, WWII, Korean, Vietnam, Lebanese peace keeping force, Grenada rescue mission, the Panamanian intervention force, or the Persian Gulf, provided they meet other eligibility criteria, to include: a permanent legal resident of Massachusetts for at least one year and in accord with the university's residency requirements; not in default of any federal student loans or owing a refund; must be a degree candidate or eligible to apply for a degree candidacy.

Office of Disabled Student Services
The Office of Disabled Student Services, a part of the Academic Resource Center, is a support organization helping students who are disabled to pursue their educational goals while adjusting fully to their new environment. The following services are provided on an individual basis:
- mobility assistance
- reading assistance
- note-taking
- alternative testing
- peer counseling
- advocacy and support

Helping with academic procedures such as orientation, financial aid, residence hall arrangements and placement, the Office interfaces with all university resources to give an added dimension to their services. Beyond satisfying the immediate needs of students, the Office organizes and holds workshops addressing issues of sensitivity and awareness within the university.

The policy of UMass Dartmouth regarding admission and access to programs prohibits discrimination on the basis of disability. Applicants to the university and enrolled students are not required to disclose a physical or a learning disability. However, disabled applicants and students are invited to contact the university's Office of Disabled Student Services to discuss assistance that they might require. These confidential conferences enable prospective students to determine if UMass Dartmouth can meet their needs but are kept entirely separate from the admissions decision. The information will be used in accordance with 34 Code of Federal Regulations Part 104.

The Office of Disabled Student Services is located in the basement of Group I, room 016. Inquiries are invited by phone at 508-999-8711.

Testing Office
The Testing Program, administered by the Division of Continuing Studies, provides a

range of testing services to both university students and people throughout the region. Among the standardized academic tests offered are ACT/PEP, Advanced Placement exams, CLEP, GRE, GMAT, LSAT, TOEFL, MPRE, and MAT. State tradespeople can also be licensed by taking the Massachusetts examinations for barber, water systems, electricians, gas fitters, plumbers, radio-TV technicians, and construction supervisors. Special examinations for various academic curricula are also administered by the Testing Program.

Testing is held at a variety of times and dates (often on Saturdays). Necessary registration fees are charged. Call 508-999-8039 or leave messages at 999-8639.

Posting of test results to UMass Dartmouth academic records is done in the Office of the University Registrar.

Upward Bound Program
Upward Bound is a college preparatory program that provides academic and counseling support services to students who attend New Bedford, Westport, and Greater New Bedford Vocational High Schools. It is designed to generate the skills and motivation necessary to succeed in post-secondary education. This objective is achieved by providing students with tutorial and instructional services coupled with intensive academic, career, and personal counseling.

During the Academic year students enroll in the Upward Bound course at their high school. The course is designed to instruct students in areas relevant to becoming strategic learners as well as areas of social and cultural interest. Class time is also set aside for tutorial help.

The program also offers a six-week summer residential component on the UMass Dartmouth campus. Students attend classes in a variety of subjects, and many are offered a tuition-free college course. Academic activities are paired with a host of other activities and trips, culminating in a student-developed Production at the end of the program.

All Upward Bound students have been defined as "at risk." The support services they are offered encourage and motivate them to complete high school and go on to institutions of higher learning.

Student Affairs Mission Statement
The Division of Student Affairs is an integral part of the educational process and offers programs and services that assist students in achieving their fullest potential at UMass Dartmouth. As administrators, educators, advisors and advocates, we strive to provide an environment that holistically promotes personal growth, leadership development, social responsibility, student empowerment, involvement and well-being in the intellectual, social, cultural, spiritual, emotional, career, and physical realms.

We are committed to building a community:

•
where quality deliverables are accessible and where a receptive and well-trained staff is efficient, caring, responsive and user-friendly.

•
where civility is affirmed; community service is rewarded; access and retention are supported; the living and learning environments are cohesive; student life is vibrant and possesses school spirit and traditions; student rights and responsibilities guide behavior for the common good; and diversity, respect, and tolerance of differences are aggressively pursued on an individual, institutional, and global level.

•
where learning and personal development through co-curricular programs foster an environment where students learn outside of the classroom through increasing opportunities and raising student expectations and through involving students in decision-making and leadership roles.

The division's programs and services are designed to motivate and inspire students to devote time and energy to educationally purposeful activities and support an effective academic community.

Vice Chancellor for Student Affairs
The vice chancellor and associate vice chancellor direct and supervise all of the activities of the Division of Student Affairs to meet effectively the broad educational goals of the university and the individual needs of students.

The vice chancellor's office serves as an advocate for all students. As a member of the top administration of UMass Dartmouth, the vice chancellor serves as a liaison between the faculty and the co-curricular needs of the student.

Dean of Students
The Dean of Students assists students in a variety of ways and works with the Alumni Office of the university.

Associate Dean of Students
The Associate Dean of Students assists students in personal and social matters and strives to improve the quality of campus life by helping students and organizations. In addition, the Associate Dean of Students supervises the staffs of the Student Activities Office, International Student Office, Coordinator for Student Judicial Office, and Greek Affairs Office. The Associate Dean of Students also coordinates orientation programs and services as advisor to the freshman class. The Associate Dean of Students reports directly to the Vice Chancellor for Student Affairs.

International Students' Advising
The Associate Dean of Students serves international students by providing general advice and assistance with campus life, personal needs, and also immigration forms and other official papers they need while studying here at the university. The Academic Affairs/Graduate Studies office provides visa-related services to students, faculty, and staff and issues all initial strudent visas; the office also oversees the university's many exchange-student programs.

Judicial Affairs Office
The Judicial Affairs Office deals with student conduct and the student disciplinary system. Information on all policies and procedures relating to student conduct and student rights and responsibilities is available through this office.

Counseling Center
The University Counseling Center offers the broad spectrum of psychological and educational support services and assists students in defining their goals and developing their potential. Short-term counseling and psychotherapy (individual or group), educational, vocational, and psychological testing, and structured groups and training programs are provided by trained and experienced counselors and psychologists. At the University, counseling is considered a learning process through which one can understand and accept one's self, one's environment, and the relationships between the two—and thus mobilize energies, select appropriate goals, and adopt effective behavior. Students visit the Counseling Center for many reasons. Some want information about academic or service resources; some wish to talk about their major or graduate school plans; others are experiencing difficulties with study skills or anxiety about exams. Many come to talk about their relationships with others or about themselves—their hopes, fears, identity, self-confidence, or doubts. The staff counselors and psychologists treat all concerns professionally and confidentially. A consulting psychiatrist provides psychiatric evaluations and referrals.

The Counseling Center, located in the upper-level of the auditorium annex, maintains an educational information library and extensive self-help literature.

Beat Academic Probation Program (BAP)
The Beat Academic Probation (BAP) program is offered each semester to students who have been put on academic probation due to a Grade Point Average (GPA) below a 2.0. BAP offers the student a chance to raise his/her GPA by attending the workshops; it also guarantees that they will not be dismissed from the University the following semester if their grades have not reached the 2.0 level. BAP workshop sessions cover areas such as study skills, note-taking, test anxiety, test-taking, and time management. Members of the Counseling Center staff assist in the training of the BAP leaders and act as consultants to BAP.

Alcohol and Drug Education Program
The Alcohol and Drug Education program

- supports students and staff in demonstrating responsible conduct regarding alcohol and drugs;
- promotes attitudes and behaviors regarding alcohol and drugs which create a university atmosphere of civility and discourage any behavior that is abusive to oneself or others; and
- provides, consolation, evaluation, intervention, support groups, and referral services to students.

The education program provides orien-tation for new students about alcohol and drug-related issues and university policies, workshops for student organizations and departments regarding assessment of alcohol/drug troubled students, weekly professional lectures and seminars on current alcohol and drug related topics, PACE (Peer Alcohol Concerns Educators) peer presentations and events, an extensive alcohol and drug education library, alcohol and drug awareness weeks, and assistance to faculty in teaching about alcohol and drug-

related issues.

The program offers **CARE (Chemical Awareness Responsibility Education)**, a mandatory multilevel program for students who violate the university alcohol and drug policy. Intervention is available to any student identified as having a problem with alcohol or drugs. Any student, staff, or faculty person can request intervention support information from the Alcohol/Drug Education Coordinator.

Weekly support groups offered are Alcoholics Anonymous, Women's Recovery Support group, Men's Recovery Support group, Smart Recovery group, Relapse Prevention group and Adult Children/Loved Ones of Alcoholics Support group.

A student organization, **Peer Alcohol Concerns Educators (PACE)**, is a peer resource for student alcohol and drug concerns. Experiential learning credit is available. If you would like to reach a PACE member or if you are interested in participating in PACE, please contact Laurajane Fitzsimons, Alcohol and Drug Education Coordinator, Counseling and Student Development Center, Upper level, Auditorium Annex, 508 999-9153 or Lfitzsimons @umassd.edu

Career Resource Center (CRC)
The CRC provides a wide array of career resources and services to help students clarify career goals and develop professional skills. Individual career advisement sessions are available by appointment. Workshops are offered frequently in a variety of career-related areas such as résumé writing, interviewing techniques, career planning and professional etiquette.

The Center also coordinates all on and off campus student employment, including Federal Work Study.

The CRC's Career Resource Library helps students research and explore careers and find employment opportunities. Various job listings are available including full-time, part-time, and summer employment. Internship, experiential learning and co-op opportunities are also available both in the library and, on our website [http://www.umassd.edu/careerser/welcome.html]. A weekly publication, JOBTRAKKER, lists local, national and international employment opportunities. Students may visit the library on a drop-in basis.

The Shadow Day program gives students an opportunity to "shadow" alumni for a full day in a career-related field selected by the student. The CRC and the Alumni Affairs Office work in cooperation to coordinate this activity.

The CRC also coordinates special career-related events and activities such as the annual Career Expo which has become one of the largest on-campus job fairs in southeastern New England. Other activities include Career Chats, Student Employee Appreciation Day and Take Our Daughters to Work Day, which is co-sponsored by the Women's Resource Center. The CRC coordinates on-campus recruitment for seniors.

The CRC helps students identify and arrange experiential learning and internship opportunities, which offer work experience for academic credit. On-campus or local placements are widely available. Students may also seek such placements as Disney World in Orlando, Florida, and The Washington Center in Washington DC. These many opportunities are described fully in the chapter of this catalogue on Special Learning Opportunities.

The CRC coordinates community service activities via the Community Service Desk. There are community service-related work study opportunities such as the Community Service Learning Program and America Reads Program. The Community Service Desk provides listings of volunteer agencies and activities in the local communities. All students are encouraged to participate in special community service events such as *Make A Difference Day* and *Hunger and Homelessness Clean-Up Day*.

Health Services
Health Services is located in Phase 3A Residence Halls. During the academic year, a physician and nurse practitioner(s) are on duty each class day. Two registered nurses, a consulting dermatologist, and a consulting nutritionist are also on staff. This office is equipped to handle most health related problems a student might encounter while at UMass Dartmouth. Referrals are made to community resources when appropriate.

All services are available to all students through the Student Health Fee. Health Services is concerned with the total well-being of each student and committed to health education and disease prevention. Also, Health Services contracts for student health insurance. The Commonwealth of Massachusetts requires university students to have comprehensive health insurance, and information regarding coverage is included with each student's tuition statement.

Students should notify Health Services and/or appropriate faculty of any personal health conditions which might make participating in certain classes, studios, or laboratories a risk to their health. A history of allergies, asthma, respiratory problems, cardiac conditions, or a pregnancy could make participation in certain classes inappropriate.

Frederick Douglass Unity House
The Frederick Douglass Unity House recognizes the special needs of the university's diverse student body, seeking to establish a cultural environment focused on the unique social, cultural, and academic needs of students of color. On a day-to-day basis students use the space to study, access computer facilities, hold organizational meetings, plan activities and events, meet with members of faculty and staff, or just socialize. Here the entire student body can experience, participate in, and initiate activities that foster an inclusive campus culture. The Unity House is open from 8:30 am to 10:00 pm Monday through Friday and at selected weekend times for special events.

Religious Resource Center
Campus Ministry coordinates the religious activities and serves the spiritual needs of the university community. Clergy and ministers from major religious denominations provide opportunities for worship, spiritual direction, counseling, and special programs. The staff welcomes persons of all creeds and will make referrals to resources of particular religious traditions in the greater community at the request of the individual. The office is located on the second floor of the Campus Center.

Office of Multicultural Support Services and Assessment
Through student affairs research, evaluation, and assessment, this office assists in identifying and better understanding the developmental needs of students of color, international students, first-year students, and other diverse student groups. The office helps to create an integrated campus environment where all students, no matter what their skin color, their religion, or their cultural background, can feel comfortable and welcome. And the office assists in the development and implementation of support programs that improve student learning, and satisfaction.

Student Activities, Clubs, and Organizations

Childen's Center for Learning
The UMass Dartmouth Childen's Center for Learning, a licensed early education and care facility, is available for the children of students, faculty, and staff. To be eligible for enrollment, children must be between two years, nine months, and seven years of age. The Center is professionally staffed; the director and teachers hold master's and/or bachelor's degrees in education. An educational component is incorporated into the program with a curriculum designed to be developmentally appropriate and geared to meet the needs of each child.

Students find workstudy, experiential learning, and volunteer opportunities available at the Center. Students in these positions assist the professional staff, helping to maintain a staff/child ratio of 1:5. The Center is located in Residence Hall Phase 3A and is open from 7:30-5:00 PM on days when the university is in session during the academic year. Additional information is available from the director by calling 508 999-8873, or by e-mail to dsansoucy@umassd.edu

Women's Resource Center
Founded in 1970, the Women's Resource Center exists to meet the needs of women in the university community. Today the center continues that original mission by promoting equality for women in careers, education, health, and safety. The Center provides a supportive community for women on campus, and encourages positive working relationships between men and women. The Women's Resource Center has a lending library and resource files, and sponsors single parent groups and events like Take Our Daughters to Work Day, Violence Awareness Week, Women's History Month, and National Coming Out Day. Workstudy, experiential learning, internships, and volunteer positions are available.

The Women's Resource Center provides resources that help to create an educational atmosphere rich in visible role models and free of sexual bias and inequities, where women can grow to their full potential. The Center offers cultural opportunities that further women's personal and professional development and promote a broader understanding of the diverse experiences of all women. Central to our mission is the recognition of gender, class, sexual orientation, and other significant aspects of individual identity.

Campus Center
The Campus Center is the heart of the co-curricular activities and services of the University. It is the community "living and dining room" for all members of the University family: students, faculty, staff, alumni, and guests. Housed in the Campus Center are such services as the Campus Shop, Main Cafeteria, Sunset Dining Room and Pub, Arcade, Billiards Room, Convenience Corner, Box Office, Copy Center, UMass Pass (debit card), Snack Bar, and Information Center. Also housed in the Campus Center are 21 clubs and organizations, the Student Activities Office, the Radio Station, and the university newspaper. The Campus Center is open daily. The Main Auditorium is home to the University Theater Company and used by many organizations for large concert hall type events. Community events are often held in the Auditorium, which is a fully equipped theater.

Office of Student Activities
The Office of Student Activities is the center of student activities and co-curricular programs. It provides assistance and resources in all aspects of program planning, to student organizations and clubs. The Coordinator of Student Activities coordinates the activities of over 100 student organizations and advises the Student Activities Board, which sponsors university-wide programs. The office also has a publicity staff that provides advertising services for any campus group or function.

The Student Activities Board plays an integral part in the educational development of UMass Dartmouth students by involving them in the planning of events. SAB is the largest volunteer student campus organization. The Office of Student Activities advises all organizations on the implementation of their programs—from answering questions to assisting with the entire event.

MassPIRG
The Massachusetts Public Interest Research Group is a state-wide, nonprofit and nonpartisan organization directed solely by students. MassPIRG has two basic goals: to research and promote solutions to important social problems at the local, state, and national levels; and to teach students civic values through a variety of project and internship opportunities. As approved by the university's student government, the valuable public-interest work of this organization is supported by a waivable fee.

Greek Affairs Office
The Associate Dean of Students works closely with the Greek Liaison/Advisor to develop programs and policies. This office also provides service to Greek groups such as training, and assists groups with meeting the requirements of their national offices.

Student Government
Students hold office in various organizations that govern the campus, and they serve on committees that determine policies and directions for many aspects of campus life.

The Student Senate is the major governing body and offers a forum for debate on matters of importance to the student body. The Senate also appoints students to membership on a wide range of university committees. Students are active, voting participants on many of the committees that recommend policies and regulate procedures for academic as well as social aspects of the university. A student is also elected to the university's Board of Trustees.

A List of Clubs and Organizations

The following list is presented to show the range and variety of student clubs and organizations. Refer to the *Student Handbook* for official details and contact persons.

Ethnic Heritage
Asian Students Organization
Cape Verdean Students Organization
India Students Organization
Leitorado of Portuguese
Luso-American Student Association
Organization of Arab Students
Portuguese Language Club
Taiwan, Republic of China (R.O.C.) Student Club
United Brothers and Sisters

Greek Chapters
Alpha Phi Alpha
Iota Phi Theta
Phi Sigma Sigma
Sigma Tau Gamma

Academic Fraternities and Sororities
Eta Kappa Nu
Phi Psi
Pi Sigma Alpha
Mu Kappa Chapter
Sigma Delta Pi
Tau Alpha Pi
Delta Delta Chapter
Theta Kappa Chapter of Sigma Theta Tau
Nursing Honor Delta Mu Delta Society

Media Groups
Phaedrus
Scrimshaw
Siren
Temper
Torch
WSMU -91.1 FM

Performing Arts
Chorus
Symphony Orchestra
Jazz Improvisation Ensembles
Instrument/Vocal Instruction
Theater Company
Brass Ensemble
Composers' Recitals
Concert Band
Guest Artist Series
Guest Lecturer/Master Series
Guitar Ensemble
Music Guild
Pep Band
Percussion Ensemble
Sound Pro-Electronic Studio
Stage Band
String Quartet
Vocal Ensemble

Professional Societies
Accounting Association
American Society of Civil Engineers
American Society of Mechanical Engineers
Biology Association
Chemistry Club
Computer Science Club
Economics Association
Institute of Electrical and Electronic Engineers
IEEE Computer Society
International Business Association
Finance Group
American Association of Textile Chemists and Colorists
Massachusetts Student Nurses' Association
Clinical Laboratory Science, UMass Dartmouth Student Association
Political Science Association
Psi Chi Psychology National Honor Society
UMass Dartmouth Student Chapter of the National Society of Automotive Engineers
Society of Manufacturing Engineers
Physics Club/Society of Physics Students
Society of Women Engineers

Religious Groups
Catholic Campus Ministry
Catholic Student Organization
Christian Fellowship
Episcopal Ministry
Hillel, The Jewish Student's Association
Islamic Society

Special Interests
American Association for Textile Technologists
American Marketing Association
History Association
Disabled Students Coalition
Human Resources Management Club
Intelligent Transportation Systems Society
International Student Leadership Institute
Marketing Club
Society of Professional Engineers
Poets' Circle
Psychology Association
Student Association for Medical Spirit Group

Student Chapter of the American Production and Inventory Control Society
Student Chapter of the American Society for Quality Control
UMAC (UMass Aviation Club)
Veterans' Club
Wood Club
United Nations Association
UMass Dartmouth Alumni Association
Fencing Club
French Club
Math Club
Metals Guild
Philosophy Club
Psychology Association
UMass Dartmouth College Republican's Club
Robotics Club
SHARE Foundation
Inner Space Society
Literary Association
Outing Club
UMass Dartmouth Pistol and Rifle Association
Sculpture Club
Ski Club
Computer Graphics Club
Fine Arts Committee
Omniad

World at Large
B.A.C.C.H.U.S.
Labor Education Center
MassPIRG
Amnesty International
Gay and Lesbian Alliance (BiGala)

Student Athletics

Intercollegiate Athletics
The university is a member of NCAA Division III. Colleges and universities in NCAA Division III place highest priority on the overall quality of the educational experience. In so doing, they seek to strengthen the integration of objectives and programs in athletics with academic and developmental objectives, and to assure the integration of athletes with other students. To that end, the university places special importance on the impact of athletics on the participants rather than on the spectator, and greater emphasis on the internal constituency (students, alumni, and special friends) than on the general public and its entertainment needs. The intercollegiate program is non-scholarship.

There are intercollegiate teams for men in the following sports: baseball, basketball, cross country, football, golf, ice hockey, soccer, swimming and diving, tennis, lacrosse, and track and field (indoor and outdoor). The intercollegiate program for women includes the following sports: basketball, cross country, field hockey, soccer, softball, swimming and diving, tennis, lacrosse, track and field (indoor and outdoor) and volleyball.

In addition, cheerleading and equestrian are offered as coed sports.

Intramural
Intramural opportunity for all students is provided in basketball, cross country, flag football, softball, swimming, tennis, volleyball, water basketball, and coed softball.

Instructional
Noncredit courses are offered at convenient times for all interested students in the following: aerobics, step aerobics, modern jazz dancing, tennis, slimnastics, swimming, first aid, lifesaving, springboard diving, swim fitness, and CPR.

Facilities
Facilities are available for recreational use by students throughout the school year. They include the gymnasium, swimming pools, weight room, running track, practice soccer field, softball fields, tennis courts, and intramural fields. Equipment is also available. Schedules are printed each week in the *Torch* and posted in the gymnasium. A new running track plus regulation varsity soccer, lacrosse and softball fields should be completed be the Fall '98 semester. An addition to the Tripp Athletic center has been scheduled for 1999.

Conference Memberships
For women, the university is a member of the National Collegiate Athletic Association (NCAA), Eastern College Athletic Conference (ECAC), the Eastern Association for Intercollegiate Athletics for Women, the Massachusetts Association of Intercollegiate Athletics for Women, New England Intercollegiate Track Association for Women, New England Women's Intercollegiate Swimming Association, New England Women's Lacrosse Alliance, and Little East Conference.

For men, the university is a member of the National Collegiate Athletic Association (NCAA), Eastern College Athletic Conference (ECAC), New England Intercollegiate Golf Association (NEIGA), New England Lawn Tennis Association (NELTA), Pilgrim League, New England Intercollegiate Soccer League (NEISL), New England Intercollegiate Swimming Association (NEISA), New England Intercollegiate Amateur Athletic Association, New England College Athletic Conference (NECAC), Little East Conference, and New England Football Conference.

Housing and Residential Life

The Office of Housing and Residential Life, located in Residence Hall IIIA, is responsible for all phases of resident living on campus. This includes social, cultural, and educational programming, custodial and maintenance, discipline, room assignments, and, in general, the promoting of a living/learning environment in on-campus housing. The staff of this office also administers the housing needs of summer students and conferences.

The residence halls are more than just places to eat and sleep; they provide the opportunity for students to become part of a community.

Residence Halls and Student Apartments
The university has four residence halls housing 1,300 students and two townhouse clusters housing 800 students.

The residence halls have 10 and 12 person wings with double and single rooms and one or two bathrooms. Each section of these wings has at least one lounge/kitchenette. Recreation, mail, laundry facilities, and a resident director's apartment are part of each building.

Within the Residence Halls are located a Fitness/Weight room, Coffee House, Video room, and two Computer Clusters. In addition, teaching assistants provide tutoring opportunities on a scheduled basis in designated study room for some academic areas.

Apartment-style living is found in the Cedar Dell student apartments, which consist of 136 five and six person townhouse style apartments housing students in single rooms. Recreation, mail and laundry facilities are available in two student centers. The Cedar Dell Village environment is more autonomous than in the residence halls, and priority for this housing is given to upper-class students.

A Cable TV signal is provided to the lounge/ living rooms of both residence areas. Also, each bedroom has a live telephone port and a port to access the computer network.

Availability
Currently, any student of the university may request on-campus housing, regardless of the distance from the campus to his or her permanent address. Students who receive on-campus housing may continue to live on campus through their period of study, if they remain in campus housing and in continuous enrollment.

Smoking
Most areas are nonsmoking. Smokers may ask for a "smoking allowed" room.

Charges
Charges for student housing are shown in the chapter on Expenses and Student Financial Services.

The Resident's Handbook gives additional information.

Students participate through the Residence Halls Congress, a collective advisory group representing student interests in the residential facilities. The Residence Halls Congress also creates program opportunities for the on-campus population and in many ways works closely with the Office of Housing and Residential Life to enhance on-campus life.

Meals for On-Campus Students
Students living in the residence halls receive meals in the Residence Dining Hall. A student may contract from one of four board plans which range from 7 to 19 meals per week, including brunch and dinner on weekends, or may pay a single meal rate which includes unlimited seconds. Charges for student meal plans are shown in the chapter on Expenses and Student Financial Services. (Dining Services are not offered through the Student Services Division but are administered by the Auxiliary Services unit of the university.)

Department of Public Safety

The Department of Public Safety provides twenty-four hour a day protection of the entire campus and individuals on the campus. Our police officers are vested with full law enforcement powers (identical to the local police in the community). The Officers are trained at the Massachu-setts Criminal Justice Training Academy and receive additional in-service and specialized training in such professional aspects as first aid, CPR, defense tactics, legal updates, evidence gathering, traffic control, and investigations.

Officers are responsible for a full range of public safety services including all crime reports, investigations, medical emergencies, fire emergencies, traffic accidents, enforcement of laws regu-lating underage drinking of alcoholic beverages, the use of controlled substances, weapons, and all other incidents requiring police assistance.

Investigations/Crime Prevention
Another unit in the Department of Public Safety is the Investigation and Crime Prevention Unit. This section is staffed by two officers who specialize in selected crime prevention duties. Some of the programs available through the Crime Prevention section include a Victim Survival Course, Sexual Assault Presentations, Operation I.D., Alcohol Awareness and Anti-drunk Driving Workshops.

The Victim Survival Course provides participants with a chance to test the reactions to various confrontational situations. Members of the Department of Public Safety join together with volunteers to be actors in various situations that one may possibly encounter in daily living.

Shuttle and Escort Service
The University provides the "DART," a shuttle van for on-campus safety transportation. The service begins at 6:30 each night and ends at 11:30 pm, or at 2:00 am when the library's computer lab closes late. When there are special events on campus, extended service is provided for one-half hour after the event closes. There is a pre-set route that takes approximately 20 minutes to complete. DART service stops are designated with a sign and are located at the residence halls, the campus center, the gym, Cedar Dell, and the library. The DART does not respond to special requests for transportation except to provide direct service for disabled students.

The Department of Public Safety provides safety escorts upon request, depending upon availability of officers. Service is requested by dialing University Police at x8107.

Parking on Campus
All members of the university community wishing to use their cars on campus must register with the Department of Public Safety and receive a parking sticker. Residence students may keep a vehicle on campus.

Parking decals are available at Mass Pass located in the campus center. Decals for handicapped parking will be issued at the Department of Public Safety; all wishing permits for handicapped parking must register there.

Parking is free of charge.

UMass Dartmouth Campus Store
The Campus Store stocks all textbooks required for classes plus recommended and supplementary hardcover books and paperbacks, general and art supplies, greeting cards, clothing, jewelry, the general catalog of the university, souvenirs, and gifts. Special order service is offered for hard-to-find books.

The Campus Store offers Apple and PC computers, auxiliary printers, and software to full-time students at special educational prices. The Campus Store is located on the ground floor of the Campus Center. Daily hours are 8 am to 5 pm Monday through Friday. Special hours to serve evening students are posted at the Campus Store entrance.

In addition to cash transactions, the Campus Store accepts *VISA, Master Card, American Express, Discover,* and checks in the amount of the sale, with appropriate identification. Also, the Campus Store is integrated with the "UMass Pass" system which allows students, once funds are deposited, to make purchases and charge their accounts.

UMass Dartmouth Alumni Association
All current students should consider remaining active participants in the life of the university, through the UMass Dartmouth Alumni Association. Described here are those aspects of the Association's many activities that relate especially to current students.

The UMass Dartmouth Alumni Association is the largest volunteer organization on campus. It represents the interests of more than 30,000 former students in all 50 states and around the world. Serving as liaison between the university and its former students, the Alumni Association provides opportunities for people to get involved in shaping the future of their school.

This year, alumni contributors will help the Alumni Association provide money for scholarships, gifts, and grants for students, faculty and campus projects. During the Annual Fund phonations, students call graduates to solicit gift support. Alumni also participate in recruitment of new students by hosting get-together sessions in various communities of the state.

Some of the on-campus activities the Alumni Association sponsors include:

- Homecoming Weekend
- Senior Class Pancake Breakfast
- Alumni Employees Pride Day.

On Homecoming Weekend, hundreds of alumni return to campus for events that include the Corsair Hall of Fame induction banquet, the annual Homecoming football game, and a post game party. Students are invited to attend most activities. Various classes and student organizations have reunions at different times of the year.

Students have the opportunity to talk with alumni about career choices throughout the year. During the year career panels bring alumni from various professions back to campus to tell students about their career paths and to offer students tips on how to enter the job market. The Alumni Career Network reference guide is available to students in the Office of Career Services. The guide gives students an opportunity to contact alumni directly for career advice or to arrange visits to job sites.

A description of the programs and activities of the Alumni Association is given in a subsequent section of this *Catalogue*.

Dining Services
As mentioned earlier, Residence Dining Hall students may contract from one of four board plans which range from 10 to 19 meals per week, including brunch and dinner on weekends, or may pay a single meal rate which includes unlimited seconds. Charges for student meal plans are shown in the chapter on Expenses and Student Financial Services.

The university offers a range of food and dining services.

A la carte dining services are available through three cafeterias, the Commuter's Café, the Sunset Room for table service and the Magic Oven Cookie Shop in the Campus Center. In addition, the Corsairs Cove serves fresh pizza and sandwiches on the ground floor of the Residence Dining Hall. Automatic vendors are conveniently located for off-hour service.

Arrangements for special functions, meeting space and board plans may be made with the University Functions/Scheduling Clerk, in office on the ground floor of the Residence Dining Hall.

Academic Regulations and Procedures

Academic Regulations and Procedures

All rules are subject to change in accordance with existing and hereafter adopted university policies. Official changes will be clearly stated in university policy documents.

Notations may indicate when specific regulations became or will become effective. If there is no notation, regulations are now fully in effect.

What's New in this Section for 1999-2000

The following represent policies or procedures that are new for this catalogue. Please find and review the section referenced.

Time Spent in Class-Related Work
UMass Dartmouth has adopted a statement on time students should spend in class-related work and in outside employment. See p. 41.

Repeating of Courses
UMass Dartmouth has modified the regulations under which students may repeat classes. Specifically, the process of receiving permission has been modified. In addition, students may repeat a class more than once, but only with appropriate permissions. See p. 42.

Directed Study Course Numbers
Directed Study courses are now offered at each course level, 1xx, 2xx, 3xx, and 4xx, in order to match the level of the course of record.

Catalogue Commitments

The catalogue which is in effect when a student first enters the university (as a regularly admitted student) is generally the one that will govern that student's course and program requirements. However, circumstances may occur that require modification of this principle.

Changes may occur in the requirements for academic programs or regulations. Whenever possible, such changes will be phased in, with the class affected and year when the changes first apply being stated. If a formerly required course or courses should no longer be offered, substitutions will be considered in individual program planning; the institution will attempt to respond flexibly in such cases. In the rare event of an academic program being phased out, those in the program will be given a reasonable amount of time to complete the requirements. Neither transfers in nor new admissions will occur.

For students who return after a period of withdrawal or dismissal (in other words, who do not maintain continuous registration or who leave without a granted leave of absence), the governing catalogue will become that which is in effect when they are re-admitted. Individual requests to be allowed to revert to the earlier catalogue will be reviewed by the dean of the student's college.

Students may wish to change their majors a year or more after they join the university. Such students may be refused the option of using the version of the major that was listed in a former catalogue, being instead subject to requirements of a newer version. Students who entered under one governing catalogue may prefer the requirements in a subsequent catalogue. They may request permission to have that newer catalogue apply to them; in such cases, however, they shall then adopt *all* requirements from the newer catalogue. Ten years is deemed sufficient time for a part-time student, in continuous registration, to complete a degree. If a student takes more time than this, the university will reserve the right to impose the requirements of a later catalogue. Because each edition of the *General Catalogue* may not be prepared significantly in advance of its distribution and the *Catalogue* is not re-edited every year, changes may go into effect before the next edition is printed. Such changes will be clearly stated in university policy documents.

Issues concerning the catalogue that governs for individual students are resolved at the level of the college dean.

Maintenance of University Records

The Office of the University Registrar maintains the official educational records of all graduate and undergraduate students.

The Registrar's Office also conducts registration, arranges schedules, enforces certain academic regulations, and issues official transcripts from the university. Petitions to receive credit toward one's university degree for courses which have been taken elsewhere must be filed with the Registrar. The Registrar also certifies enrollment to the Social Security Administration, the Veterans Administration, insurance companies, banks, guaranteed student loan agencies, and other agencies including higher education loan agencies.

Confidentiality of Records
The university policy on the confidentiality of records is consistent with the requirements of the Family Education Rights and Privacy Act of 1975 (FERPA).

The policy is designed
- to protect the privacy of educational records,
- to establish the right of students to inspect and review their educational records, and
- to provide guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the Family Policy Compliance Office, U.S. Department of Education, Washington, DC 20202-4605 concerning alleged failures by the university to comply with the Act.

The university is allowed to disclose certain basic information about students without their assent, and is in fact required to do so by state statutes. Such disclosable information is called "Directory Information."

The university has designated the following categories of student information as directory information: student's name, local and permanent addresses and phone numbers, most-recently attended previous school or college, major field of study, dates of attendance, home town where applicable, membership in university curricular and extra-curricular organizations, weight/height of members of athletic teams, and degrees and awards received. Currently enrolled students may withhold disclosure of the above categories of information by submitting written requests to the Student Enrollment Services Center. Once a non-disclosure request has been filed, it will remain in effect until further notification from the student. The university assumes that absence of a

student's request to withhold public information indicates individual approval of disclosure.

UMass Dartmouth publishes a directory listing its current students, issuing a new directory each fall semester. The directory will list names, local and permanent addresses, campus electronic mail addresses, major field of study, and dates of attendance or class year. This directory will be sold at a reasonable cost in the Campus Store. It will thus be available not only to students but to members of the general public, including political groups, public or private agencies, and advertisers. As stated above, students may request non-disclosure at the Student Enrollment Services Center.

FERPA restricts significantly the right of others to view a student's educational records. The following are some categories of individuals who *may* view or receive a student's educational records, by federal law and by the procedures established for the university.

1. The student him or her self (except materials to which the student has waived the right of access, such as confidential letters of recommendation, and records that are not "educational records").

2. Persons whom the student authorizes by name in a written, signed statement that specifies the purpose of the disclosure and names the records to be released. This rule covers special requests and also all requests to send transcript copies to employers or other educational institutions. Such disclosure may be incorporated within signed agreements to participate in an activity or program—for example, receiving a scholarship.

3. Officials of the campus and university who have a "legitimate educational interest" in the information. At UMass Dartmouth, "officials" includes...
   - Persons employed by UMass Dartmouth in an administrative, supervisory, academic or research, or support staff position (including some student workers);
   - Officers of the UMass central administration; *or*
   - Persons, including students, serving on committees where legitimate "need to know" exists (examples are persons serving on a committee that recommends award of scholarships or persons serving on the board of an honor society).

   Such officials have a "legitimate educational interest" or "need to know" if performing a task that ...
   - Falls within the context of assigned institutional duties or responsibilities;
   - Relates to the functioning of the office, position, or committee involved;
   - Relates to the education or the disciplining of the student; *and*
   - Is consistent with the purposes for which the information is kept.

4. Parents who have established that the student is a dependent on their federal income tax. Otherwise parents have no right of access to their daughter's or son's educational records.

5. Persons or organizations providing financial aid to students or determining those aid awards, as necessary to determine eligibility, amounts, or conditions of an award or to enforce its terms and conditions.

6. Persons in compliance with a judicial order or lawful subpoena. The university will make a reasonable attempt to notify the student in advance of such release of information.

7. Appropriate parties in an emergency if the knowledge or information is necessary to protect the heath or safety of the student or others.

Persons authorized to view or retain a student's educational records, as above, may in no case transmit, share, or disclose the information to any third party. All third-party requests for information should be addressed to the Office of the University Registrar.

The complete UMass Dartmouth FERPA policy statement gives additional details and categories. It also defines what records are deemed to be "educational records" in this context.

A complete copy of the university's procedures and policies regarding the Family Educational Rights and Privacy Act is available for inspection at the Office of the University Registrar and is distributed in print each year to our active students.

Requests for Transcripts
Transcripts may be purchased for a modest fee by both present and former UMass Dartmouth students, from the Registrar's Office. Both official and unofficial copies are available. "Rush" copies are available at an additional charge; these are produced while you wait or, when requested by mail, are mailed out the same day as the request is received. Requests for transcripts must be made in person or in writing to the Registrar. Faxed requests are accepted.

Student ID Card/UMass Pass
At fall registration, new students receive a photo ID card, called the UMass Pass, and each continuing student's ID card is revalidated. At any time during the year, lost or damaged ID cards may be replaced, for a fee.

The UMass Pass can also serve as a debit card used to make transactions otherwise requiring cash. Students may deposit money in their account by depositing a check, to take advantage of the following services: all cash food operations, Campus Store, Convenience Corner, vending machines, laundry services, and University Box Office. The UMass Pass is honored at a growing number of off-campus businesses.

Students must carry their ID cards at all times and present them to a university official upon request. Student ID cards serve many purposes, such as obtaining library services, participating in athletic or social events, and validating checks in the campus store.

Student ID Number
The university requests all students (except international students who lack them) to submit their social security numbers for use as their student ID number. However, those who do not wish to volunteer their social security numbers will be issued a special nine-digit number for this purpose, upon formal request to the Office of the Registrar. Students who do submit their social security numbers can be assured that the university will respect and protect their privacy.

Change of Student Information
Students should notify the Student Enrollment Services Center or Registrar's Office of any change in their student record. A form is made available to report changes in personal information, such as a change of name or address. The student's University Records file is the official repository of individual information such as personal data, major and minor programs, and academic records.

Undergraduate Degree Requirements

To earn a UMass Dartmouth undergraduate degree, a student must meet the following UMass Dartmouth requirements:

1. **Be admitted to degree status as a UMass Dartmouth undergraduate student**

   UMass Dartmouth offers the undergraduate degrees of Bachelor of Arts, Bachelor of Fine Arts, and Bachelor of Science. (See the *Graduate Catalogue* for graduate offerings.) Each degree requires being accepted into and fulfilling the requirements of a major. Students are admitted to degree status through the Office of Admissions or through the official degree admission procedures of the Division of Continuing Education. Non-degree students, sometimes called "special students," are not eligible for a UMass Dartmouth degree.

2. **Meet the residency requirement of UMass Dartmouth**

   At least 45 credits of work must be completed at UMass Dartmouth. Other credits that may be applied to the degree include advanced placement, transfer credits, and, in the case of UMass Interchange Transfer students, credits and grades from another UMass campus. No more than 60 credits can be accepted from any combination of postsecondary 2-year institutions, advanced placement, or CLEP credits.

   At least 30 credits of advanced and specialized courses must be completed (UMass Dartmouth courses numbered 300 or higher, excluding courses numbered 900—Contract Learning).

   It is expected that students will earn most of their advanced and specialized course credits at UMass Dartmouth. Students may be granted permission by the appropriate chairperson and college dean to earn some of these requirements at another institution, so long as UMass Dartmouth major and minor requirements are met to their satisfaction thereby.

   The new policy applies to incoming UMass Dartmouth degree students admitted fall 1998 and beyond.

3. **Satisfy the general education requirements of UMass Dartmouth (general education requirements will first be stated for students entering in fall of 1998)**

   This category refers to a series of requirements that all UMass Dartmouth students must meet, beginning with students entering in fall 1998. They are stated later in this catalogue section. Those entering previously do not need to meet a general education requirement (unless returning in fall 1998 or beyond after a lapse from active student status—see "Catalogue Commitments" section, above).

4. **Satisfy the distribution requirements of the college and the academic major**

   UMass Dartmouth requires students to complete distribution requirements according to the degree sought and the program and College. These distribution requirements vary among colleges and majors and with year of graduation. They are described in the college and department chapters of this catalogue. Distribution requirements ensure breadth of studies beyond limits of the academic major.

5. **Complete a UMass Dartmouth academic major**

   In order to graduate from UMass Dartmouth, a student must successfully meet all requirements for a specified major within a recognized department, or an approved inter-departmental major. Specific requirements for each major are included in each department's section of this catalogue. A UMass Dartmouth major must consist of at least 30 credits in appropriate courses carrying departmental approval; some majors require additional credits. Most majors require a seminar equivalent or special individual project. Such a project may be incorporated in a specific course or carry separate credit.

   While some programs require approval of a major early in a student's college career, all UMass Dartmouth students shall be required to request a major no later than the registration period for the fall semester of the junior year. Formal request shall be made to the appropriate chairperson, or as the case may require (e.g., multidisciplinary studies), the program coordinator.

   Students whose overall grade point average is above the dismissal grade point average shall be allowed to request a major. (However, most majors require a minimum GPA of 2.0 or higher.) Students whose overall grade point average is below the dismissal grade point average shall be candidates for dismissal.

   By being accepted into and fulfilling the requirements of two majors, a student may graduate with one degree and a dual major, or two degrees.

   Students admitted to a major may remain in it until graduation, until they shift to another major, or unless they are dismissed from the major because they did not meet a requirement for progression. Requirements for progression in each major are stated in the appropriate sections of the General Catalogue. Such requirements may include (but are not limited to) the following: maintenance of a minimal G.P.A. in all courses or in all major courses; satisfaction of requirements for progress in completing major courses; the passing of one or more mid-program reviews; the meeting of stated requirements for professional practice. Dismissals from a major are recommended by the department to the college dean.

6. **Have a grade point average of at least 2.000 in all courses taken in the major**

   All work required in the student's major field of concentration must be satisfactorily completed. The cumulative grade point average for courses taken in the major shall be set by the department at not less than 2.000.

7. **Have at least 30 course credits in advanced and specialized courses**

   At least 30 course credits in advanced and specialized courses—courses numbered 300 or higher, excluding courses numbered 900 (contract learning)—must be satisfactorily completed at or under the sponsorship of UMass Dartmouth.

Other Program Options

8. **Have a cumulative grade point average of at least 2.000**

   A cumulative grade point average of not less than 2.000 for all credits submitted for the degree must be attained.

9. **Complete 120 credits of courses (minimum—some programs require a higher number of credits for the degree)**

   The requirement to complete 120 credits of courses is a minimum. Some programs require a higher number of credits for the degree.

Qualified students may complete an academic minor or a double major. General requirements of the university's academic minors are stated below, and specific minor-program requirements are stated in the program sections of this catalogue.

Within their studies, many students will also work towards a certain goal, such as preparation for teaching, entrance to law school or medical school, or certification in a certain area of studies. These many options are described in other places in this catalogue.

Minor Requirements
Approved minors consist of at least 18 credits, of which 9 must be at the upper division level. Individual departments will designate their upper division courses. The same course may count both for minor and for distribution requirements.

Any degree candidate who has earned at least 54 credits, with a cumulative grade point average of 2.000 and with a 2.500 grade point average in the major, may request from the department in question admission to a minor.

Successful completion of a minor will be so noted on the student's transcript.

A department offering a minor may establish other specific requirements.

Department or College Requirements
Academic requirements more restrictive than or in addition to UMass Dartmouth requirements may be established for any major or program.

General Education Requirement

Students entering as Freshmen in Fall 1998 and Spring 1999, including those with 15 or fewer college transfer credits entering as Freshmen with Credit, are subject to UMass Dartmouth's new general education requirement. The general education requirement will apply to all future entering freshmen and also to all transfer students entering in Fall 1999 or beyond who will graduate in the year 2002 or later.

To qualify for graduation, students subject to the General Education Requirement must meet its stipulations by means of an appropriate selection of courses. The table to the right summarizes the requirements.

Goal of General Education

The goal of UMass Dartmouth's General Education program is to educate students to be not only proficient in their areas of specialty, but also

- to have a working understanding of the connections between disciplines;
- to appreciate and respect the differences among ourselves;
- to be ethical, culturally-aware, and socially-responsible citizens;
- to be quantitative and rational thinkers; and
- to be effective and creative communicators.

Information about General Education

UMass Dartmouth has prepared a booklet informing students of the details of the general education requirement. Moreover, the *approved lists* referred to above will be made available every semester in the published Schedule of Classes booklet. The code symbols from the chart above are also utilized in the course descriptions of this catalogue to identify all courses that have received "permanent designation" as counting for one or more of the general education areas. A few courses apply toward a category of general education only in certain years or depending on the instructor assigned to teach them; these courses, which receive "contingent designation," are identified only in the Schedule of Classes booklets.

General Education Area	*Code*	*Qualifiers*
Cultural & Artistic Literacy 9 credits	**C**	All regular courses from the departments of history, philosophy, foreign language, and English (literature and creative writing courses only); and from the College of Visual and Performing Arts. No more than 6 credits from the same department
Ethics & Social Responsibility 3 credits	**E**	A course which has at least 12 instructional hours in ethics and social responsibility, from the approved list OR A departmental major or college requirement (course or sequence of courses) which has at least 12 instructional hours in ethics and social responsibility, as approved for that unit
Global Awareness & Diversity 6 credits	**G** AND	A three-credit course in global awareness, from the approved list,
	D	A three-credit course in diversity, from the approved list
Information & Computer Literacy 6 credits	Tier 1 AND	English 101 and 102, incorporating computer-based assignments and library instruction
	I	Department-specific advanced literacy skills, as approved for that unit (credits unspecified). This course is to be taken before the student's senior year.
Mathematics, Natural Science, and Technology 9 credits	**M** AND	A three-credit course from the department of mathematics (non-remedial)
	S	Six credits from . . . (a) all regular courses from the departments of biology, chemistry, medical laboratory science, civil and environmental engineering, computer and information science, electrical and computer engineering, mechanical engineering, and physics; OR (b) other courses which emphasize fundamental scientific concepts or application of scientific methods in critical thinking and problem-solving in the natural sciences, from the approved list
Written & Oral Communications Skills 9 credits	**W** AND	English 101 and 102; AND three credits in a writing-intensive course before the senior year, from the approved list
	O	At least two formal oral presentations in one or more courses designated by the student's major department and approved for that unit

Courses that meet these requirements are coded in the departmental course listings of this catalogue.

The General Education Committee is actively at work helping the campus community to implement these requirements and approving additional general education course requirements.

Gen Ed and Transfer Credit

Course equivalencies are determined in the transfer credit approval process. If a course from elsewhere is found equivalent to a UMass Dartmouth course or category of courses that satisfies a gen ed requirement, the transferred-in course will satisfy that same requirement. For example, if a student is awarded transfer credit equivalent to our course American History I (HST 115), the diversity gen ed requirement is met, since HST 115 meets that requirement. Transfer credit for ENL 101 and ENL 102, however, does not carry credit for the Information and Computer Literacy requirements.

Relation to Other UMass Dartmouth Requirements

General Education course requirements take their place beside other requirements, as outlined in the section on Undergraduate Degree Requirements, rather than replacing any other graduation requirements. Students are alerted especially that the general education requirements and the distribution requirements for their major and college are not necessarily the same; *both* sets of requirements must be satisfied

However, any courses used in satisfying a general education requirement may also be used to satisfy other kinds of requirements.

That is, Gen Ed is an "overlay" requirement, not a separate requirement.

For example, some courses used for general education will often also meet requirements for the major. Other general education courses may meet the "distribution requirements" established by the colleges of the student's major.

However, one Gen Ed course cannot satisfy two different Gen Ed course requirements for a student, even if listed on two lists.

General Education Requirements

Starting with entering freshmen in fall 1998 (Class of 2002)

Area C	Area E	Area G	Area D	Area I		Area M	Area S	Area W		Area O
				Tier 1	Area I			Tier 1	Area W	
Cultural and Artistic Literacy	Ethics and Social Responsibility	Global Awareness	Diversity	Information and Computer Literacy		Mathematics	Natural Science and Technology	Writing Skills		Oral Skills — at least 2 formal oral presentations
				Basic requirement	Advanced major course(s)			Basic requirement	Writing-intensive course(s)	
9 credits	unspecified	3 credits	3 credits	6 credits	unspecified	3 credits	6 credits	(6 credits)	3 credits	unspecified
Courses from: *College of —* Visual/Perf. Arts *Depts. of —* For. Lit. and Leng. History Philosophy English — literature and creative writing *Other courses from:* approved list No more than 6 credits may be from one dept.	Depts. may specify course or sequence or utilize approved list *Consult dept.-specific lists for your major, and approved list*	*Courses from:* Approved list	*Courses from:* Approved list	ENL 101 ENL 102 Both include computer-based assignments and instruction Also satisfies Area I-Area W, Tier 1 requirement	Depts. will specify course or sequence *Consult dept.-specific lists for your major*	*Courses from:* Dept. of Mathematics Dept. only	*Courses from:* Depts. of Biology Civil Enrg. Chemistry Computer Sci. Electr. Enrg. Genrl. Engr. Med/ Lab/ Sci. Mech. Enrg. Physics Other courses from approved list	ENL 101 ENL 102 Also satisfies Area I-Area I, Tier 1 requirement	Depts. may specify course or sequence or utilize approved list *Consult dept.-specific lists for your major, and approved list* Note: this requirement is to be met before the student's senior year.	Depts. will specify course or sequence *Consult dept.-specific lists for your major*

Courses excluded: experiential learning/internship; independent study/research; directed study; developmental/remedial; graduate; and courses taken Pass/Fail.

Academic Advising at UMass Dartmouth

Roles of the Academic Advisor
UMass Dartmouth's faculty take their obligation to advise students seriously. Students consult their advisors for assistance in —

- forming their academic goals and career objectives
- establishing an overall plan for their program of study
- understanding and meeting degree requirements, requirements in the specific academic program or major, distribution requirements and college requirements, and general education requirements
- understanding academic regulations and procedures
- monitoring their progress toward completion of their degree
- identifying campus services appropriate to their needs
- planning for any special programs like an experiential learning experience or study abroad
- responding to academic difficulties.

Students must see their advisor before they register each semester. In this contact, the advisor should review the student's academic progress, review the student's career plans, and assist the student in selecting the next semester's courses. The advisor must sign to approve the student's course selections before the student registers; in many cases, the advisor can register the student directly from his or her office.

Students may see their advisor at other times. The advisor can call a conference with the student at any time, with reasonable notice. The first stop for students who receive notice of academic warning or probation should be the office of their advisor (see below, the section on "Academic Sanctions").

The Academic Advising System at UMass Dartmouth
Every degree candidate has an assigned individual faculty member who serves as his or her academic advisor.

The student's major program determines the assignment of the faculty academic advisor. The academic department assigns each student to an academic advisor, except in certain special cases noted here —

- Students who have selected Liberal Arts as their initial program receive academic advising in the Academic Advising Center.
- Freshman students in certain majors—like Business—may receive academic advising from faculty selected from their college, located in the Academic Advising Center.
- Freshman students in the studio arts receive academic advising through a special orientation course and program provided in their College.
- Students pursuing their degree in the Division of Continuing Education receive academic assistance from qualified staff members, who provide a link between each student and the academic department of their major.

New students, be they incoming freshmen or transfer students, will meet their advisors at the New Student Orientation program.

In many academic majors, the student retains the same academic advisor throughout the program. In others, students change their advisor as they progress in their degree program.

In certain circumstances, a student will work with an advisor in addition to her or his main advisor—for example, if pursuing an academic minor; a special program such as teacher preparation, pre-medical, or pre-law; or cooperative education. When a student has a double major, s/he will have a different advisor assigned for each major.

Students have an obligation to know who their advisor is and to contact that advisor when required or when needing assistance. At the same time, each academic department has an obligation at the beginning of every semester to post in a conspicuous place the faculty advising assignments for each major student in the department. All members of the faculty must have scheduled conference hours posted on their office doors and are expected to be available during those hours to advisees; in addition, students may schedule appointments with their advisors at other times.

Because the department chairperson, not the advisor, must approve each student for graduation, the department chairperson or designee should review the record of each major in the department at the point of completing 90 credits, or three-quarters of the requirements for the degree. The department chairperson or designee is responsible to inform the student of requirements that remain unfilled.

As partners with their faculty advisors in the advising relationship, students have the final responsibility to understand the requirements for their majors and degrees and the policies of the university. Each student is given a copy of the General Catalogue in effect for the year of their entrance to degree study.

Students needing assistance with the advising system should go either to the office of the Chairperson of the department of their major or to the university's Academic Advising Center. A current list of academic department locations and phone numbers is published annually in the Student Handbook, which is given to every student each year. The Academic Advising Center, described above in the chapter on Campus Services and Support, will consult with any student on a walk-in basis and provides special guidance to those considering changing their major.

The Dean of each College has ultimate responsibility for the academic advising system for the students in the programs in his or her College.

Statement of Final Responsibility
Although faculty advisors and many others seek to guide and assist each student, it is the student—not the faculty advisor, department chairperson, or other university official—who is ultimately responsible for seeing that his or her program fulfills degree requirements.

Academic Advising Goals and Emphases
The Faculty Senate has adopted the following "Academic Advising Policy Statement" to encourage faculty in the philosophy and practice of developmental advising.*

The functions of academic advising at UMass Dartmouth include:

1. Assisting students in self-understanding and self-acceptance (value clarification, understanding abilities, interests and limitations).

2. Assisting students in their consideration of life goals by relating interests, skills, abilities, and values to careers, the world of work, and the nature and purpose of higher education.

3. Assisting students in developing an educational plan consistent with life goals and objectives (alternative course action, alternate career considerations, and selections of courses).

4. Assisting students in developing decision-making skills.

5. Providing accurate information about institutional policies, procedures, resources, and programs.

6. Making referrals to other institutional or community support services.

7. Assisting students in evaluation or reevaluation of progress toward established goals and educational plans.

8. Providing information about students to the institution, colleges and/or academic departments.

9. Facilitating the students' successful attainment of educational and career goals.

10. Facilitating the students' achievement of GPAs consistent with their abilities.

11. Making students aware of the wide range of services and educational opportunities that may be pertinent to their educational objectives.

12. Assisting students in exploring the possible short-and-long range of consequences of their choices.

13. Assisting students in choosing educational and career objectives commensurate with their interests and abilities.

* Adopted from the National Academic Advising Association.

Advising for Non-Degree Students or Prospective Students
Students who wish just to take a course or courses without being in degree status may receive assistance at the Academic Advising Center.

Such individuals may study at the university in non-degree special student status. The faculty advisors in the Academic Advising Center welcome contacts from such students and assist them in formulating their goals of study.

Students considering admission to degree study, either full or part time, should contact the Office of Undergraduate Admissions.

Role of the Deans of the Five Colleges
Students may consult the office of the Dean of their College for information or inquiries about the departmental programs or academic requirements, regulations, and processes. A role of the Deans is to approve special academic petitions and requests or to waive an academic regulation, due to hardship or special conditions. Another role is to give assistance with any student's concerns, or to handle complaints and special appeals.

Statement on Outside Work

The University of Massachusetts Dartmouth is committed to delivering the highest quality education to all of its students. In this context, we believe that for each credit, students should expect at least three hours of related academic work outside of class. While the campus is appreciative of the necessity of students having outside employment, full-time students should think carefully about the number of hours they spend in outside employment. Faculty members offer students a workload that challenges students to get the most out of their educational experience. Each student at the University registered for 15 credits should expect at least 60 hours of academic work per week.

Course Credits
Courses are the basic units of teaching at UMass Dartmouth. A course is a segment of an academic or professional field which provides insight and understanding of those topics, skills, and approaches to knowledge which are determined by the University to be important to students' educational development, personal growth, and/or career preparation.

Each course at UMass Dartmouth carries the number of credit hours specified in the course description. Lecture/discussion courses ordinarily meet three hours per week in each semester. There is, however, a wide range of hour and credit arrangements, ranging from one-credit laboratories to 15-credit practice teaching courses. Consult the chapter on "Other Learning Opportunities" for further variations.

Course Load
Full-time load: An undergraduate student is deemed to be in full-time status during a semester if carrying 12 or more credits. A graduating senior in the final semester may be considered full time with fewer credits.

Maximum load: Undergraduate degree candidates who wish to register for more than 18 credits in a semester must obtain approval of the appropriate dean. A student may accumulate a maximum of 30 credits in excess of degree requirements.

Course Level and Number System
Courses are listed by number and title. Courses are numbered according to the following system:

100-level—introductory courses

200-level—intermediate courses

300/400-level—advanced and specialized courses normally requiring prerequisites; including seminars, honors, practica, theses, and independent study

500/600-level—graduate courses.
Open to undergraduates only with permission. Some programs prohibit undergraduates from registering in 500/600-level courses.

Courses may be offered that do not give credit toward graduation but count in calculating a student's load (this is called "administrative credit"). Usually, these courses are numbered 100 or lower (e.g., English 100 and Math 100).

Transfer of Credit from Other Institutions

Waiver of Courses

If students demonstrate proficiency in areas that are part of their degree program of study and have the approval of the faculty specializing in that area, they may petition through the department chairperson to the dean of the appropriate college to have the course(s) for which the proficiency is proven (by examination, portfolio review, successful completion of a previous program of studies for which credit may not have been received, etc.) waived as a requirement for the fulfillment of their degrees. When a course is waived as a degree requirement, the student is still responsible for the successful completion of a number of credits equal to those assigned to the waived course.

Repeating of Courses

Students may repeat individual courses once, but only if space is available and with the written consent of their department chairperson and their advisor. Students who wish to take the same course a third or subsequent time may be permitted to do so only after obtaining written permission from the instructor, from the academic advisor, and from the chairperson. It is the student's responsibility to follow this procedure since instructors may remove names of students from the class roster who have not received permission to attend the class.

Only the appropriate UMass Dartmouth course may be used; no course taken at another institution can replace a UMass Dartmouth course's grade. Only the most recently earned course grade (whether higher or lower) shall enter into calculation of the cumulative grade point average. However, all courses attempted by a student will be part of the permanent record.

The detailed practices in transfer of credit by incoming students are stated above, in the chapter on Admission to the University, in the section called "Advanced Standing through Transfer Credits."

A current UMass Dartmouth student who wishes to enroll in courses in another university or college for transfer credit to UMass Dartmouth should have such courses approved in advance by the appropriate department chairperson and college dean in order to insure the transferability of such credits. A form is available for this purpose, and assistance may be sought at the Academic Advisement Center.

On completion of the courses, an official transcript should be forwarded to the UMass Dartmouth Registrar. A C- grade is the minimum acceptable grade for receiving undergraduate transfer credit at UMass Dartmouth. Transfer coursework for which credit is given will be recorded on the student's permanent record card without a grade designation. It will not be calculated in the student's grade point average.

Certain courses completed at another institution are, by prior arrangement, deemed to count as UMass Dartmouth credit. Examples include courses taken in Study Abroad, in formal Exchange status, and in special arrangements whereby another institution's courses are identified as receiving UMass Dartmouth credit; and credits accepted for UMass Interchange Transfer students. Grades earned in such courses are displayed on the UMass Dartmouth transcript and affect the student's grade point average.

Enrollment in Courses

Registration

Registration is the process by which students enroll in courses each semester. Returning students are responsible for registering during the established registration period. New and transfer students and re-admitted students register according to the most recent instruction from the Office of the University Registrar. Registration will not be considered effective until all financial obligations to UMass Dartmouth are met.

Add/Drop

Up to the end of the first week (five class days) of the semester, a student may officially Add courses or Drop courses without record. In the case of courses that meet only once a week, the Add/Drop period shall be two weeks. No one shall enroll for Experiential Learning, Independent Study, and Honors Thesis credits after the second week (ten class days) of the semester without the permission of the appropriate dean or a designee.

Withdrawal from Courses

Students may withdraw from a course only through the end of the tenth week of classes of the semester. A grade of W will be recorded (the former grades of WF and WP will no longer be used.)

More than 24 credits of W makes the student subject to dismissal from the University through the action of the Dean of the student's College. Grades of W do not affect a student's G.P.A.

A student who withdraws from *all* courses shall be deemed to have withdrawn from the university.

Class Attendance

There is no University-wide attendance policy. Students are expected to be present at all scheduled activities related to courses in which they are enrolled and are responsible for the course work and assignments missed during any absences. They must take the initiative in making up any work missed and finding out about any assignments made during their absence. Extended absences for medical or personal reasons should be reported to the Office of the Dean of Students.

Individual faculty members are responsible for informing students of the attendance rules for each class and the penalties for violating them. Faculty members are solely responsible for the enforcement of these rules.

A class session is considered canceled if the instructor does not report within ten minutes from the beginning of the class period.

Absence for Religious Observance
Students have the right to make up examinations, study, or work requirements that they miss because of absence from class for religious observance, but they also have an obligation to inform the course instructor as to the days on which they will be absent for religious reasons. Students should inform the course instructor in writing of the days they will be absent as early as possible in the semester and always prior to the day(s) the student will be absent for religious reasons.

If they feel that it is important for course planning, instructors have the right to require students to provide a written list of days they will be absent for religious observance within one full week after the students' enrollment in the course, provided the instructor lists this requirement and corresponding deadline on the course outline or other handout.

In the event of a dispute about religious observance between a faculty member and a student, the chairperson of the department in which the course is taught shall be responsible for its amicable resolution. If the dispute cannot be resolved at this level, the issue will be referred to the dean of the college in which the course is taught.

For convenience, a listing of major days of religious observance is given at the end of this chapter.

Financial Obligations
Any student who has an outstanding financial obligation to the University will not be considered officially registered for courses. The obligations include tuition, fees, housing charges, Campus Store balance, library fines, loan balances, parking fines, etc. Financial clearance must be obtained from the Bursar's Office.

Change of Major or College
Students requesting a change of major will be expected to meet entrance requirements of the new major. Access to majors may be limited.

Requests for change of academic major or college must be approved by the department chairpersons involved and the dean of the college to which the student is transferring. The change of major form is obtained in the Registrar's Office and the Academic Advising Center.

Study Away/Study Abroad Status
Students who undertake formal study experiences such as study abroad, internships, clinicals, or cooperative education placements at a different institution or off-campus setting may remain enrolled at UMass Dartmouth and, in some cases, be eligible to receive UMass Dartmouth financial aid. Such study must be under the sponsorship of UMass Dartmouth (that is, be an approved element in their degree program) and receive approval from the department, dean, and Academic Advising Center, which serves as the contact-point for requesting this status.

Leave of Absence
A student may request of the appropriate college dean a leave of absence for a period no longer than two calendar years. Students on leave of absence may return within the stipulated period by writing to the college dean at least four weeks prior to the first day of classes in the semester of return. The college dean may specify an earlier notification deadline in limited enrollment programs. Students on leaves of absence who exceed their stipulated time on leave will be considered to have withdrawn and so will be subject to the re-admission procedures, below.

Students on leave are not considered enrolled.

Re-admission After Interruption of Study
Former students may request re-admission to continue undergraduate work, after an absence longer than that covered by an approved leave of absence or after an absence for which they did not obtain an approved leave. Re-admission requests are submitted to the Registrar, who forwards the request to the dean of the college of the student's major. A modest fee is charged to each applicant for re-admission.

An individual's re-admission is not automatic; some re-admission requests are denied. The individual is evaluated for academic progress and for availability of space in the major program and must receive Bursar's clearance. Applicants who wish to be re-admitted in a different major or who were not making satisfactory progress when they withdrew receive a special scrutiny at the departmental and dean's level. "Satisfactory progress" in the phrase above refers to students who were neither dismissed from the university for academic reasons nor on academic probation at the time of withdrawal.

Withdrawal from the University
A student who wishes to withdraw from UMass Dartmouth must file a Withdrawal Notice Form with the Registrar, who will inform the dean of the student's college. Failure to follow this procedure will jeopardize the student's re-admission. A student who officially withdraws shall receive a W in each course as appropriate (see Grading System). If a student does not reenter the University in the following semester but plans to at some later time, he or she must apply for a leave of absence.

Veterans who withdraw are urged to consult the Coordinator of Veterans' Affairs.

Students who withdraw separately from all class sections in which they were enrolled in a term are deemed to have withdrawn from the university.

Students may withdraw from the university and receive "W" grades through the end of the final day of the official instructional period for that term or semester. If they withdraw after the final examination period has commenced, they are subject to standard grades for that term.

Re-admission to Pursue a Second Bachelor's Degree
Individuals who received a bachelor's degree from UMass Dartmouth or a predecessor institution may request re-admission to pursue a second bachelor's degree. As above, these requests are submitted to the Registrar, who forwards the request to the dean of the college of the student's intended new major. Such a student must complete at least 30 additional credits at UMass Dartmouth, and will complete all courses required for the second degree, including any prerequisite or deficiency courses not previously completed satisfactorily. Such a re-admitted student will be considered a regular degree-seeking student and be subject to major program

requirements and the university's academic policies and procedures.

Re-admission to pursue a second degree is not automatic; some re-admission requests are denied. The individual is evaluated for academic qualifications and for availability of space in the major program.

Students with a bachelor's degree from a different institution may seek admission to UMass Dartmouth to pursue a second bachelor's degree through the university's Office of Undergraduate Admissions. Such students, upon admission, will be required to complete at least 45 credits at UMass Dartmouth, meeting the terms of the university's undergraduate residency requirement, given earlier in this chapter.

Re-admission to Pursue a Non-Degree Course of Study
Former students who wish to return to UMass Dartmouth to earn a certificate or take courses not applied toward a degree should seek acceptance as non-degree special students, in a process described earlier in this chapter. Many options are available, from selecting courses for personal interest or benefit to entering one of the university's formal certificate programs, described below in the chapter on Interdisciplinary and Special Programs.

Grades are determined and assigned by Instructors according to the guidelines indicated below. Each student's academic achievement and fulfillment of degree requirements are reflected in the transcripts which are issued at the end of each semester.

The UMass Dartmouth grading system includes plus and minus grades which are used in computing grade point averages.

The grading system includes the following letter grades and quality points:

A Excellent
Quality Points:

A+	4.000
A	4.000
A-	3.700

B Good
Quality points:

B+	3.300
B	3.000
B-	2.700

C Satisfactory
Quality Points:

C+	2.300
C	2.000
C-	1.700

D Marginal
Quality Points:

D+	1.300
D	1.000
D-	0.700

D- is the lowest grade acceptable for credit.

F Unsatisfactory
Quality Points: 0
Failure to meet minimum standards either on the basis of work submitted or not submitted. No credit awarded. 0 quality points awarded for purpose of computing G.P.A. credits as indicated in course description.

F(I)
Quality Points: 0
An F assigned for failure to complete a course within a year after the assignment of an I notation.

W
Official withdrawal by the student from a course after the Add/Drop period, and up to the completion of tenth week of the semester. No credit awarded. W grades do not affect a student's G.P.A.

CR
A passing grade. Credit given upon satisfactory completion of a Cooperative Education semester, a contract under Experiential Learning program. Not included in grade point average. This grade may also be assigned as a passing grade under grade appeal procedure.

NC
A failing grade. Under Cooperative Education or Experiential Learning program, no credit awarded. For purposes of computing G.P.A. credits as agreed upon by contract.

I
Work Incomplete. May be given only in exceptional circumstances at the instructor's discretion and at the student's request made no more than 48 hours after the final examination or last class. The student must be passing at the time of the request or must be sufficiently close to passing for the instructor to believe that upon completion of the work the student will pass the course. If the work is not completed within a year of recording of the I, the grade will become an F(I). "I" grades cannot be changed to W.

P
Passing. The P grade is recorded for grades of A, B, C, or D, under the pass-fail option. The grade of P may also be used for satisfactory completion of courses that do not carry credit (e.g., English 100). Not figured in grade point average.

IP
In Progress. Notation used in special cases to indicate that academic progress covers more than one term; e.g., that a grade will be assigned on the completion of the task involved. The "IP" notation is replaced upon receipt of the official grade. Until or unless replaced by an official final grade, the notation "IP" will remain on the transcript.

NR
Grade not reported by instructor at time of grade processing. "NR" is not a permanent grade.

F
Under pass/fail option. See "F" definition above. No credit awarded. 0 quality points awarded, for purposes of computing G.P.A. Credits as indicated in course description.

AU
Audit. Registration and permission of Instructor needed for auditing, submitted to the Registrars Office no later than the end of

the add-drop period. This notation is used when no examinations, evaluation, or credit are involved.

Pass/Fail Option
Sophomores, Juniors, and Seniors may select a Pass/Fail Option for one course per semester (up to a maximum of four courses), except in the following cases:

- any course specified as a degree requirement;
- any course in a student's major, unless the department rules otherwise;
- any course used to satisfy general education requirements or the distribution requirements of the degree program in which the student is enrolled.

Pass/Fail is not available to graduate students.

Selection of Pass/Fail Option
Students will be given through the first five weeks of each semester to exercise the option, which shall then be irrevocable. Only the student and the Registrar shall know that the option has been selected. Grading practice, vis-a-vis faculty and students, will be identical to the usual marking procedure.

The burden of selecting a proper course under Pass/Fail rules shall be borne by the student. Any doubt whether a course is a degree requirement and so not eligible for Pass/Fail shall be resolved by consultation with the dean of the college in.which the student is enrolled. If the course chosen *is* a degree requirement, then the student will be subject to the usual marking practices.

Pass-Fail Grading
Grading practices under this option are as follows:

- A Pass/Fail student who does passing (i.e., A through D-) work in a course shall be given a grade of P (Pass). Passing a course shall earn a student graduation credits but shall not be counted in the cumulative average. Failure in a course will be 0 quality points and will be counted in the G.P.A.
- The Registrar shall be required to keep a separate record of the grades obtained in the Pass/Fail courses and will issue this record only on the request of the student.
- The transcripts will contain the Pass/Fail notation, but the grade actually achieved will be kept on file in the Registrar's Office.

Scholastic Standing
A grade point average (G.P.A.) is determined for each student at the end of each term's program of courses. A G.P.A. is computed by multiplying the credit of each UMass Dartmouth course by the quality points of grade received in that course. The sum of the above is then divided by the total number of credits in courses in which the student enrolled. Grades of P, CR, I, W, WP, WF, IP, AU are not included.

A cumulative grade point average is the average of all the UMass Dartmouth grades other than of P, CR, I, W, WP, WF, IP, AU, of the student. Grades of F, F(I), and NC earn zero quality points. Such grades are included in the student's average according to the number of credits specified in the course description.

Change of Grade
Whether for a one- or two-semester course, the grade received at the end of each semester stands as the final grade for the semester. For certain special coursework (honors, research programs, etc.) in which it is extremely difficult to assess academic progress on the basis of one term, the notation "IP" (In Progress) is acceptable on an interim basis. The "IP" notation is replaced upon receipt of the official grade.

The statute of limitations on all grade change requests is one year from the date that the grade was placed on the student's record. In extreme and exceptional cases, on request of the student and recommendation of faculty, the instructor and/or the appropriate college dean may authorize changes in grades given over one year from the date the grade was assigned.

Grade Appeal
Grade appeals are pursued through a formal process, which is conveyed in the university's Grade Appeal Policy. Copies of the full policy and an outline of procedures are available in the offices of the college deans, at the Academic Advising Center, and at the Office of Academic Affairs. The following paragraphs summarize the grade appeal process.

A faculty member is identified to act as a Grade Appeal Facilitator, who will offer advice to both students and faculty about how to prepare for and conduct their respective roles in the process. The present Grade Appeal Facilitator is Dr. Robert Piper, Professor of Political Science.

Only final course grades may be appealed. For the purposes of appeal a final grade may be alleged to be (1) unfair because of the unequal application of grading standards within the course section, or (2) in error because of a clerical or computational error. An appeal may be pursued only if there is a valid basis and evidence for it, and the collection of evidence to support an allegation is the obligation of the student. Students will attempt to resolve differences first through informal and amicable discussions with the faculty member or through the good offices of the Grade Appeal Facilitator.

Formal appeals are addressed in writing to the Grade Appeal Facilitator and must be initiated within the first 20 class days of the following semester, excluding summers, or within 25 working days from the date that the grade report is mailed out from the Registrar's Office, whichever is later.

Responsibility for initiating an appeal rests with the student who received the disputed grade. Responsibility for developing and presenting evidence that the grade given is unfair or in error rests with the student making the appeal.

Class Standing
Freshman: Up to and including 29 credits or 1/4 of graduation credit requirements in the student's degree program.

Sophomore: From 30 to 59 credits or 1/2 of graduation credit requirements in student's degree program.

Junior: From 60 to 89 UMass Dartmouth credits or up to 3/4 of graduation credit requirements in student's degree program.

Senior: More than 90 credits or more than 3/4 of graduation credit requirements in student's degree program.

The university's computer system will identify students' class standings by credits completed—freshman, through 29; sophomore, 30 to 59; junior, 60 to 89; senior, 90 or above. Students may request a calculation by hand if the standard calculation is wrong for their program.

Academic Recognition

Dean's List
Following the completion of each semester, full-time students (in "day" or Continuing Education) who have completed at least 12 course credits, excluding courses taken under the Pass-Fail option and Experiential Learning, and who have no "I" grades outstanding for that semester, are considered for the Dean's List and the Chancellor's List for that semester. Those who achieved a grade point average of at least 3.200 will be named to the Dean's List for that semester. This accomplishment will be noted on the student's transcript.

Chancellor's List
Under the same limitations as for the Deans' List, those who achieve a G.P.A. of 3.800 or better for a given semester will be named to the Chancellor's List rather than the Dean's List. This accomplishment will be noted on the student's transcript.

Graduation with Distinction
Students are eligible for graduation with distinction provided they achieve a cumulative grade point average in all of their UMass Dartmouth credits of:

3.200 to 3.499	Cum Laude (Distinction)
3.500 to 3.799	Magna Cum Laude (High Distinction)
3.800 to 4.000	Summa Cum Laude Highest Distinction).

Graduation with "Cum Laude," with "Magna Cum Laude," or with "Summa Cum Laude" is inscribed on the student's diploma. Graduation with distinction is based on all UMass Dartmouth work including the final semester.

University Honors Program

University-wide honors activities are available to full-time undergraduate students who demonstrate high academic achievement. University Honors Programs are designed to:

- provide a forum for the discussion of topics of academic interest along interdisciplinary lines;
- offer departmental and interdisciplinary honors courses; and
- recognize those students whose academic accomplishments are outstanding.

Students with an excellent academic record receive an invitation also to participate in the Honors Colloquium, an Honors Essay Contest, and other events that recognize the achievement of honors students.

For further information contact the office of University Honors Programs located in Room 339 of the Group I Building, x8277.

Students with a minimum G.P.A. of 3.200 may enroll in available introductory level honors sections of courses such as history, sociology, psychology, English, chemistry, philosophy, biology, and business. Students applying for admission to UMass Dartmouth with test scores and/or high school records which predict university performance at honors level will also be invited to enroll in honors sections, and nominations from high school counselors or teachers of their creative, high-potential students are welcome.

For continuation in the program students must maintain a minimum G.P.A. of 3.200 in honors courses and 3.200 in all course work. Those who complete the full University Honors Program earn the designation *Commonwealth Scholar*. Required are:

- completion of 15 credits of 100- and 200-level honors courses outside the student's major
- completion of HON 201 Multidisciplinary Approaches to Scholarly Research and Writing
- completion of 6 credits of junior level honors course work in the student's major, in conjunction with a department's honors curriculum or via an honors contract through the University Honors Program
- completion of 6 credits in the senior year earned for an honors project or thesis, in conjunction with a department's honors curriculum or via honors thesis guidelines of the University Honors Program.

Departmental Honors
Several Departments offer to qualified students a special curriculum leading to Honors in the major field. Students satisfactorily completing the departmental requirements for Honors in the Major will, upon graduation, have their diplomas so inscribed and be so designated on the graduation program. Departments will notify all eligible candidates by the end of their Junior year. Potential participants shall follow departmental guidelines for entry into the Honors program.

Participants shall have a minimum G.P.A. of 3.000 for all course work. Departments may require higher minima and, in addition, may set minimum G.P.A.s in the majors. G.P.A.s will normally be determined after the fifth semester.

Departmental Honors Programs will include an appropriate end product, normally a project or thesis. A maximum of six credit hours may be awarded for completion of the project/thesis. Departments shall develop procedures for approval of participants' proposals. A faculty sponsor or honors advisor shall advise an honors candidate, according to departmental or program guidelines. An evaluation committee, which shall be multidisciplinary in nature, shall be established according to departmental or program guidelines. This committee shall evaluate the completed honors project/thesis and determine if the work meets standards for honors.

Academic Sanctions

Stated below are policies and procedures approved for the 1997-98 academic year and beyond.

Academic Warning

Any student having a semester grade point average below 2.000 at the conclusion of any term shall be issued an academic warning. Such warning will be available to the student's dean, department chairperson, an academic advisor, or, in the case of students who have yet to declare a major, to their advisors of record and to the Academic Advising Center. (In cases of concurrent "day" and DCE enrollment, the semester G.P.A. will combine the two.)

Students who receive three or more grades of "I" or "W" in a semester shall be issued an academic warning.

The purpose of academic warning is to call the interested parties' attention to the student's academic situation and to begin to institute action where necessary. Students receiving academic warning should immediately contact their advisors.

Academic Warning status shall be rescinded if the student's grade point average for the succeeding term is 2.000 or above, or, in the case of grades of "I," when the work has been completed and the grade recorded. Deans may rescind academic warning status if they determine that warning status has been inappropriately applied.

Academic Probation

Any student having a cumulative grade point average below 2.000 after the completion of 30 credits and two semesters at UMass Dartmouth, or who shall have received academic warning in two consecutive semesters, shall be placed in academic probation. Notice of probationary status shall be available to the student's dean, department chairperson, and academic advisor, or, in the case of students who have yet to declare a major, to their advisors of record and to the Academic Advising Center.

The purpose of academic probation is to notify the student of the possibility of his or her dismissal from the university for academic reasons, and of the seriousness of the student's position.

Academic probation has serious consequences. Among them:

- Probationary status is marked on the student's transcript; and
- Probationary status may preclude a student's participation in extracurricular activities, including intercollegiate athletics. Students who have been placed on academic probation may not serve on university committees, participate in student government organizations, or represent the university in intercollegiate athletics. The director of athletics may recommend to the Council of Academic Deans academic requirements more restrictive than or in addition to university requirements, if such changes are necessary to conform to intercollegiate athletic association regulations. Additionally, a student group governing a particular student activity, with the approval of the dean of students, may require academic performance of its student members which is greater than that which is required by the university for good standing. The Academic Eligibility Review Committee, composed of faculty appointed and chaired by the Associate Vice Chancellor for Academic Affairs, may review requests for waiver of these sanctions. The committee considers cases in which a student's performance is close to the required standard and where recent good progress has been shown.

Students placed on academic probation may request from the appropriate dean(s) a leave of absence, especially if continued academic progress is likely to lead to a notice of dismissal. Length of the leave and terms of readmission should be determined as a part of the negotiation process for the leave of absence.

Academic Probation status shall cease when the student's cumulative grade point average rises to 2.000 or above or, if the student's probationary status stems from consecutive semesters of academic warning, when the student completes a semester with average grades of 2.000 or above. Deans may rescind academic probation status if they determine that warning status has been inappropriately applied. In such cases notice of probationary status shall be expunged from the student's record.

No student will be placed on probation after only one semester at UMass Dartmouth.

Academic Dismissal

Any student whose cumulative grade point average falls below a satisfactory level in relation to the number of credits completed or who shall have been on academic probation for more than three consecutive terms shall be subject to dismissal by his or her college dean for unsatisfactory academic performance.

Satisfactory levels are as follows:

Cumulative credits	GPA requirements
to 30	1.500
31-60	1.700
61-90	1.850
91-above	2.000

"Cumulative credits" include transfer, CLEP, prior learning, exchange, and UMass Dartmouth credits and exclude courses graded W, I, AU, IP, and NR.

Students who withdraw from courses whose cumulative credits exceed 24 are subject to dismissal.

Students who accumulate more than 30 credits in excess of degree requirements within the major are subject to dismissal. Therefore students whose grade point averages are 2.000 or above but whose average grades within the major are below the minimum standards set by that major have a limited time to reach the major's grade point average after their other degree requirements have been met. In each case the student's dean or his or her designee will define "degree requirements" as reflected in the professional certification in addition to meeting the requirements of a traditional major.

Students receiving notice of academic dismissal should discuss their status immediately with their college deans and chairpersons.

No student will be dismissed for academic reasons after only one semester at UMass Dartmouth.

Reasonable Academic Progress for Financial Aid Eligibility

To maintain eligibility for financial aid, students must meet the following minimum academic standards:

Credits Attempted	Credits Successfully Completed
30	15
60	30
90	51
120	72
150	96
174	120
184	130

For an undergraduate program, the maximum credits attempted cannot exceed 150% of the published credits required for completion of that program.

Upon completion of 60 credits, students with a cumulative G.P.A. below 2.000 in all UMass Dartmouth and Continuing Education coursework must in each subsequent semester maintain a semester quality point average of at least 2.000 to continue to receive financial aid, until the cumulative G.P.A. has become 2.000 or better.

Satisfactory progress standards may be waived for students who can demonstrate mitigating circumstances, such as extraordinary physical, psychological, or medical problems. Each case will be reviewed, as appropriate, by the Assistant Chancellor for Enrollment Management or designee.

The calculation of credits successfully completed does not include grades of W, I, F, NC, AU, IP, and NR.

Academic Ethical Standards

All UMass Dartmouth students are expected to maintain high standards of academic integrity and scholarly practice. The University does not tolerate academic dishonesty of any variety, whether as a result of a failure to understand proper academic and scholarly procedure or as an act of intentional dishonesty.

A student found guilty of academic dishonesty is subject to severe disciplinary action which may include expulsion from the University. Refer to the Student Handbook and Student Judicial Code for due process.

A high standard of academic integrity promotes the pursuit of truth and learning and respect for the intellectual accomplishments of others. These are values that are fundamental to the mission of this University. Such values are undermined by academic dishonesty.

Academic dishonesty is defined as attempting to obtain academic credit for work that is not one's own. Examples include: (1) copying another student's answers on an examination; (2) obtaining, or attempting to obtain, the answers to an examination in advance; (3) submitting a paper that was written by someone else; (4) submitting a paper that includes phrases, sentences and paragraphs that were copied verbatim, or almost verbatim, from a work written by someone else, without making this clear without indicating that these words were someone else's through the use of quotation marks or other appropriate citation conventions; (5) collaborating on a homework assignment when this has been expressly forbidden by the professor; (6) using unauthorized materials in completing assignments or examinations; (7) submitting the same paper for more than one class without the express permission of the instructors involved. This list of examples should not be considered exhaustive.

This definition of academic dishonesty applies to information submitted in other forms besides paper. Submitting a project of a musical or artistic nature where all or part of the project is someone else's work, without acknowledging this fact, constitutes academic dishonesty. Submitting computer files that do not represent one's own work is also considered to be academic dishonesty; examples of computer-based academic dishonesty would include submitting a computer program or text file created by someone else as one's own, or submitting the output of a computer program written by someone else, and claiming to have written the program that generated the output.

For all forms of academic dishonesty, students who knowingly allow other students to use their work are themselves considered to be academically dishonest. Examples would include students who knowingly allow other students to copy their exam answers, and students who give papers that they have written to other students so that the other students can submit them for credit.

A faculty member is appointed by the Faculty Senate to act as an Academic Ethical Matters Facilitator. This individual will offer advice to both students and faculty about the issues involved in penalizing academic dishonesty, and the process of appealing such penalties.

Penalties assessed by faculty members for academic dishonesty generally consist of a reprimand, a requirement to resubmit the work in a more acceptable form, a lowering of a grade, failure in the course in which the alleged infraction took place, or a combination of these.

Instead of (or in addition to) assessing such penalties, a faculty member may refer the matter to the UMass Dartmouth Student Judiciary. Decisions made by the Student Judiciary may be appealed to the University Appellate Board.

A form acknowledging that each student has read, understands, and will abide by these standards will be signed by the student and placed into the student's permanent file.

Graduation Requirements

Degree Conferral

Candidates for graduation must declare their intention to graduate formally at the Registrar's Office. The deadlines for that filing are shown in the table. We strongly advise meeting with one's academic advisor during the previous semester to plan the final semester's selection of courses. At about the same time that they declare intention to graduate, students should review their academic records with their departmental advisors for a final time, to ensure that all requirements will have been met properly.

Completion of degree requirements is certified at three different times during the year. Diplomas and transcripts show the date of degree conferral as in the table below.

To give an example, students who completed final required courses in December 1998 had the degree conferred on January 31, 1999, as did students completing a final required course in the January 1998 Intersession. Students completing final required courses in spring 1999 had the degree conferred on June 7, when commencement was held that year. (See below, under "Commencement Exercises," for the policy allowing some students who will not yet have completed requirements to participate in the graduation ceremony.) Students completing requirements in July and August will receive the September 1 completion date.

The spring graduation conferral date is the date of the actual commencement ceremony. Students who complete their final required courses in a term ending by that date will have the June conferral date.

Course grades are recorded for the term in which the student registered for the course. In the case of incompletes, the actual work will be completed after that date. If a student cannot graduate at the end of his or her last term because one or more courses required for graduation have incomplete grades, the student will not receive the diploma or the final transcript until after the incomplete work is made up and the professor has assigned the appropriate new grade. In other words, diplomas and final transcripts are given out after all work required for the degree is completed, but the date on the diploma corresponds to the term in which the final grade is registered.

Graduate students have an exception to this rule for a thesis, project, or dissertation that is not completed by the time that all coursework for the degree is completed. These students register in a special "continuation" status for each term needed to complete their work, and the date of the degree conferral is that for the end of the term in which that work is completed and approved for graduation. See the *Graduate Catalogue* for details.

Once a student graduates, the transcript is closed to subsequent changes (with the exception of correction of errors), to preserve the accuracy of the certification.

Commencement Exercises

The university holds one formal commencement ceremony each year, at the conclusion of the spring semester. Students may participate in the spring commencement exercises once their records are certified. Those whose requirement records are incomplete may also participate under the following conditions:

- Insufficient Credits: Undergraduate students who are no more than twelve credits shy of completion may participate in the spring commencement exercises but will not receive diplomas at the ceremony. Permission to participate in the graduation ceremony will be determined by the student's department. The student must be able to complete work to be eligible for the September 1 diploma.

- Missing Transfer Credits: Students whose records will be completed with the inclusion of credits for one or more courses in transfer from another institution must insure that UMass Dartmouth will have received notification from the other institution by the ending due date for UMass Dartmouth's spring term final grades. Those for whom such notification is received later may participate in the ceremony but will not receive diplomas there. They will receive their diplomas at a later date, and their degree certification will be retroactive to the date of course completion.

We invite students completing requirements in July/August or December/January to participate in the up-coming June graduation ceremony, if they have not already participated in the previous spring. An individual may participate in only one graduation ceremony per degree.

Graduate students should consult the current *Graduate Catalogue* about requirements for participation in commencement.

Completion occurring	*Date on diploma*	*Deadline to declare intention to graduate*
In July/August	September 1	July 1
In December/January	January 31	November 1
By commencement	Day of commencement	March 15

Enrollment as a Non-Degree Student

For assistance:
contact Academic Advisement Center, x8455

Non-Degree or Special Student Registration

Non-Degree Special Student status allows those not seeking a UMass Dartmouth degree to register for undergraduate classes of the university on a space-available basis. (For graduate special student registration, see the *Graduate Catalogue*.) The following types of people are welcome to request undergraduate special student status:

•
Students not seeking a degree who wish to take courses for personal and professional reasons. At least a high school diploma or GED must have been received in order for registration to occur. Students must each submit proof of having received a high school diploma or GED, or an associate's or post-baccalaureate degree, before grades are issued at the end of the semester of registration as a special student.

•
Visiting students matriculated at another college. Before registration, an official letter of authorization should be provided from the student's home institution verifying that the student is in good standing. International students seeking a degree and in good standing at another university and holding the F-1 visa from that institution may also request registration as visiting special students at UMass Dartmouth. Visiting students from another UMass campus are invited to use a simplified process to enroll here; see the Admissions chapter of this catalogue.

•
Exchange students studying here by terms of an agreement between UMass Dartmouth and the home institution in another country, pursuing a degree at the home institution. Exchange students receive formal acceptance to the exchange program and are registered in special student status.

•
Persons pursuing one of the certificate programs of the university, listed in the *General Catalogue* chapter on Interdisciplinary and Special Programs. Because certificate students do not receive a formal degree, they are registered as special students. The university's certificate programs offer various opportunities for advisement, program planning, and registration for courses. Participants in certificate programs apply for and formally receive acceptance, and they must meet formally expressed conditions for completion of the program and award of the certificate.

High school students. Exceptional high school students may be accepted as part time special students. High school transcripts and letters of recommendation must be provided by the student's high school counselor or principal prior to registration. Such students may study here under the Commonwealth's Dual Enrollment program, described in the chapter on Admissions.

•
Applicants for admission to UMass Dartmouth who were qualified but were denied admission because of space limitations.

The following are not accepted as Special Students:

•
Applicants who were denied admission to UMass Dartmouth because they did not have the necessary qualifications.

•
Students who have been dismissed by UMass Dartmouth or any other college or university, for at least one semester following the dismissal. Such dismissed students may be recommended by the dean of their college for admission as special students, after a semester away, with conditions for re-admission as regular students specified and with an educational plan designed to assist in the amelioration of past deficiencies. (Others may be recommended to apply for re-admission as regular students after a semester or more away.)

•
International students who would need F-1 visas.

Students may remain as special students at UMass Dartmouth for a maximum of 30 credits. (The 30-credit limit does not apply to senior citizens.) After completion of 24 credits, the Registrar's Office will inform the student that a maximum is being approached. Any special students who later decide to pursue a degree should seek admission at an early time to guarantee adequacy of academic advisement and progress without an interruption.

All non-degree special students will go to the Academic Advising Center for approval of an application to register for undergraduate courses.

Those seeking graduate enrollment may contact the Office of Graduate Studies for assistance.

Note:
Non-degree special students are not eligible to receive financial aid. An exception to this rule may be made for those admitted to certain official certificate programs.

Major Days of Religious Observance

1999—2000

University policy and Massachusetts state law require faculty to offer make-up assignments or exams to students who are absent for religious observance. As an aid to curriculum planning, the following list of major religious observances for the 1998-99 academic year is made available by the Office of the Provost. Faculty, staff, and students are advised that the list is not exhaustive of observances of any religion. Please note that Jewish, Baha'i, and some Muslim religious observances begin at sundown of the previous day. Students planning to be absent from classes due to religious observance must notify their instructors at least one week in advance, and otherwise follow the policy stated earlier in this chapter.

Observance/Religion

Fall 1999

Rosh Hashanah
(Jewish New Year)/J
September 11-12 (Sa, S)

Yom Kippur
(Atonement)/J
September 20 (M)

Sukkot
(Festival of Tabernacles)/J
September 25-26 (Sa, S)

Durga Puja
(Worship of Divine Mother)/H
October 26 (Tu)

Birth of Baha'u'llah/Ba
November 12 (F)

Bodhi Day
(Enlightenment)/B
December 8 (W)

Ramadan Begins/M
December 9 (Tu)

Christmas
(Birth of Jesus)/C (legal holiday)
December 25 (Sa)

Spring 2000

Idul-Fitr (End of Ramadan)/M
January 8 (Sa)

Shiva Ratri (Worship of Shiva)/H
February 18 (F)

Idul-Adha (Day of Sacrifice)/M
March 17 (F)

Naw-Ruz (Baha'i New Year)/Ba
March 21 (Tu)

Muharram (Islamic New Year)/M
April 6 (Th)

Wesak (in celebration of the Buddha)/B
April 8 (Sa)

Hanamatsuri (Birth of Buddha)/B
April 8 (Sa)

Ramanavami (Birth of Rama)/H
April 12 (W)

Baisakhi (Brotherhood-Sisterhood)/S
April 13 (S)

First Days of Passover/J
April 20-21 (Th, F)

First Day of Ridvan
(Declaration of Baha'u'llah)/Ba
April 21 (F)

Good Friday
(Crucifixion of Jesus)/C
April 21 (F)

Easter (Resurrection of Jesus)/C
April 23 (S)

Summer 2000

Shavuoth (Festival of Weeks)/J
June 9-10 (F, Sa)

B=Buddhist;

Ba=Baha'i;

C=Christian;

H=Hindu;

J=Jewish;

M=Muslim;

S=Sikh

Special Learning Opportunities

Individualized Courses, Alternative Credit, Study at Other Institutions

Many students will desire educational experiences that extend beyond the regular courses of the university. The university thus offers various individually-initiated learning experiences to its students.

Such opportunities are of many sorts. They include Independent Study, Contract Learning, and Directed Study; study at a nearby university through cross-registration; study abroad; and receiving credit through a variety of standardized examinations.

Special Course Opportunities

Directed Study
Students who wish to take a regular university course in a term when it is not offered may seek to do so through a Directed Study option. However, students must understand that, because the appropriate faculty must be available and approvals must be granted, the option of Directed Study for a particular course is not always available.

In Directed Study, the faculty member must agree to provide the student with close supervision, in achieving the *same* course objectives that would have been accomplished had the student taken the course on a regular class basis. Permission for Directed Study must be obtained from the subject/course faculty member, the student's department chairperson, and the college dean, after consultation with the faculty advisor.

Forms for enrolling in Directed Study are available at the Registrar's Office. Directed Study courses will be so designated on the student's transcript, displaying the title of the course undertaken. Directed Study courses are offered at each course level, 1xx, 2xx, 3xx, and 4xx, in order to match the level of the course of record.

Independent Study
Independent Study, which is faculty-supervised research into areas of study outside the current curriculum, offers students the opportunity to investigate a research topic independently, under the close supervision of a faculty member. Independent Study will only be approved for research into areas of study that do not duplicate the University's current curriculum of courses.

The student will be responsible for meeting the requirements of the Independent Study as outlined and approved, and the faculty sponsor will assume responsibility for coordinating the Independent Study, evaluating its results, and determining an appropriate grade.

Upper Division students may request to do Independent Study, upon recommendation of a faculty sponsor and approval of the student's department chairperson and college dean. Twelve semester credits is the maximum allowed for an undergraduate academic career. The student must submit a written proposal and outline of the program of study to be undertaken, which, if approved by the sponsor and the department chairperson, will become a guide for evaluating the student's performance and accomplishment.

Forms for enrolling in Independent Study are available at the Registrar's Office. Independent Study courses will be so designated on the student's transcript, displaying an annotation of the topic undertaken.

Internships, Practicums, and Experiential Learning

Students in any major may arrange for an external learning experience. Most departments list the course Experiential Learning for their majors; it offers lower-division work experience at an elective level. Some of the university's majors offer upper-division internship or practicum opportunities for students. There is considerable variety in the types of experience provided and the levels and amounts of credit.

Experiential Learning
Experiential Learning provides an opportunity for practical application of academic training while earning academic credit.

Under the direction of a faculty sponsor, arrangements are made to work under the immediate supervision of a supervisor at a work site, which may be located on or off campus. The range of project types and settings is almost limitless, creating exciting ways to enrich one's academic studies, to test a tentative career choice, and to gain valuable experience.

The program is administered through the Career Resource Center, where students obtain assistance in finding a faculty sponsor and a work setting and in completing the required forms.

The Experiential Learning contract is an agreement to undertake a significant academic learning experience:

- Participating students maintain a log or journal of experiences. They also receive assessments from the individual they are working for, the supervisor at the work site.
- In all cases, the student must submit a work of writing and reflection to the faculty sponsor. Such a document might, for example, include the following: a) how objectives were met, b) how personal improvement has been stimulated, c) how the internship experience has related to the student's academic experience, and d) how the internship could be improved for students who pursue similar projects in the future. The exact assignment is determined by the sponsoring faculty member.
- The faculty sponsor evaluates the project and assigns either a CR or NC grade.

Students wishing to participate must submit a contract proposal and receive the required

approvals. The Career Resource Center assists students in making these arrangements.

- Students must propose a contract and receive an initial approval *before* the deadline for registration.
- By another deadline, the student must submit a formal written proposal to the faculty sponsor that both specifies the goals and objectives of the internship and details the activities and academic work to be performed.
- By the same deadline, the student must obtain approvals from the faculty sponsor, his/her department chairperson, and her/his college dean.

The following are some of the academic limitations and definitions:

- Students must be at least sophomores to participate.
- Although the typical internship contract would earn three credits, internships proposing a greater/lesser number of credit hours are also possible. Experiential Learning credits are part of the normal student credit load and subject to university policy with regard to credit hour limitations.
- Experiential Learning courses may not be used to fulfill distribution or general education requirements but serve as free electives and may be accepted toward the requirements of some majors.
- Experiential Learning credits are lower-division credits.
- Students on academic probation are not eligible for Experiential Learning, unless ineligibility is waived by their college dean.
- The work assignment is to com-prise at least 45 clock hours per academic credit, for the semester.
- Supervision of students doing projects under the Experiential Learning program shall in all cases exclude individuals who are themselves undergraduate degree candidates; and a faculty member cannot serve as both supervisor and sponsor.

Students in the College of Business are offered a junior-level Internship course in lieu of Experiential Learning. They may contact the Career Resource Center for assistance.

General Limitation on Internship Credit

No more than 1/8th of the graduation credits required for the student's major may be earned in optional internships, including Experiential Learning. Thus, a student in a 120 credit program could apply up to 15 credits in such studies toward the degree.

Internships, Clinical Experiences, and Practicums in the Majors

In some of the university's majors, students are required to have an upper-division internship, practicum, or clinical experience; in some others, an optional course is offered. These studies range from an experience nearby in a course the student takes along with other on-campus courses that semester, to a semester or even a year in an extensive experience which may be well away from campus. Consult the requirements section for your major to learn of these opportunities.

Cooperative Education in Business and Engineering

Two colleges of the university, Business and Engineering, offer cooperative education experiences to qualified students. Students in these programs alternate a semester/summer in coursework with a semester/summer on the job full time. Please consult the front of the catalogue sections for these two colleges.

Internships Away from Campus through Affiliated Programs—The Washington Center; Disney

Some programs that may be available to UMass Dartmouth students, like those of The Washington Center or Disney Enterprises, offer a full semester at an internship site. The university has formulated procedures whereby the student can maintain an appropriate enrollment status to participate in such internship programs.

Financial arrangements, enrollment status, and credit that can be earned vary, depending on the program. The Washington Center program provides financial assistance in the form of tuition waivers and some scholarship support, and offers means of earning UMass Dartmouth credit while participating. Disney internships differ depending whether one undertakes an initial or a second experience, as these vary in how UMass recognizes the academic experience.

More can be learned about these opportunities from advisors in the student's major field or at the Career Resource Center, which serves as the contact point for the many arrangements that the students need to make.

Study Abroad

The university encourages its students to study abroad. A number of exchange agreements have been established to facilitate study abroad, together with procedures for academic advisement, registration, and planning personal finances. In many cases, financial aid may be obtained; please contact your Financial Aid counselor. Furthermore, a special scholarship, the Mary Louise Walsh Fund for International Study, makes assistance available in the form of grants to undergraduates and graduating seniors. Students who wish to study abroad while remaining UMass Dartmouth students may be listed as in Study on Exchange status (sometimes called Study Away or Study Abroad). This status allows students to remain in current, registered status while they pursue full-time studies at another higher-education institution, which is usually located in another country. They may thus remain matriculated students and continue to qualify for their financial aid benefits. A modest fee is charged. Forms may be obtained in the Academic Advising Center.

Students seeking to study abroad must first plan with their faculty advisors the program of study that they intend to pursue at the other institution and receive departmental approval of this study plan.

Credits completed while a student is in Study on Exchange status will be dis-played on the transcript with grades shown and will be considered for financial aid qualitative requirements.

Starting in the 1996-97 academic year, grades earned in study abroad, converted to UMass Dartmouth equivalents, will be included in calculating the student's GPA and cumulative grade record.

The university has formal exchange agreements with the University of Grenoble (France), the Lycée du Grésivaudan at Meylan (just outside Grenoble), Nottingham Trent University (England), the Baden-Württemburg Universities (Germany), Centro de Arte e Comuniçãcao (Lisbon, Portugal); Nova Scotia College of Art and Design, the Ecole Nationale Superieure des Industries Textiles of the Universite de Haute Alsace (France), and Minho University (Portugal). Programs at these schools allow students to pursue studies in or related to their UMass Dartmouth major fields.

These exchange agreements also bring students from these many countries to study at UMass Dartmouth.

The exchange programs listed above present only one way for UMass Dartmouth students to study abroad. A large pool of additional exchange opportunities is made available to our students through the Massachusetts Consortium on International Education (MaCIE), which includes all public colleges and universities in the state. Through MaCIE, our students can choose from the study abroad opportunities offered by other public higher education institutions in Massachusetts. In addition, there are informal opportunities for study and travel during the academic year and summer.

For example, in a recent summer, the College of Visual and Performing Arts offered a design, painting, and drawing workshop in La Napoule, France (near the French Riviera). The Overseas Study Program in the College of Business sponsors a yearly trip to another country to explore an area of interest in international business. The Center for Portuguese Studies offers yearly summer study trips to Portugal.

Furthermore, students may take the initiative in finding other programs on their own; for example, students have attended University College Galway (Ireland), Shiller University (Germany), University of Wales, University of Lisbon (Portugal), University of Oviedo (Spain), University of New South Wales (Australia), Civil University "Vincente Rocafuerte" Guayaquil (Ecuador), and Tunghai University (Taiwan).

The following people can provide more information about these programs and related opportunities.

General assistance with study abroad and MaCIE liaison—John Carroll, Academic Advising Center

Baden-Württemburg, and its affiliated universities: The Universities of Heidelberg, Mannheim, Freiburg, Ulm, Stuttgart, Konstanz, Tübingen, Hohenheim, and Karlsruhe—Joseph Bronstad, Department of Foreign Literature and Languages

Centro de Arte—Memory Holloway, Department of Art History; Susan Hamlet, Department of Visual Design

University of Grenoble—Richard Golen, Department of Management

Lycee de Gresivaudan—Lewis Kamm, Department of Foreign Literature and Languages

Nottingham Trent—John Carroll, Academic Advising Center

South Africa, University of the North—Thomas Ranuga, Department of Sociology/ Anthropology

Ecole Nationale Superieure des Industries Textiles; Minho University (Portugal)—Kenneth Langley, Department of Textile Sciences

Duncan of Jordanstone College, University of Dundee—Michael Taylor, Department of Art History

The Office of the Associate Vice Chancellor for Academic Affairs/Graduate Studies provides general oversight over exchange programs and assists students with visa and travel arrangements.

Receiving Credit Through Standardized Examinations

CLEP Examinations
The University has approved the use of the College Level Examination Program (CLEP). The CLEP exams are offered by the College Entrance Examination Board. The program enables those who have reached the college level of education outside the university to demonstrate their achievement and to use the test results for college credit and/or placement.

The equivalency of CLEP examinations to this university's courses shall be determined by the department that teaches that subject matter. CLEP credits may not be used to duplicate or replace credits for coursework taken here or elsewhere. The Office of the University Registrar maintains a current list of CLEP examinations accepted for credit; we advise current students to consult us before deciding to take CLEP tests.

CLEP credits are defined as transfer credits and will not be reflected in an individual's grade point average. No more than 30 credits earned by CLEP Examination may be used to satisfy degree requirements.

Two types of CLEP examinations are offered:

Subject Examinations
One semester's course credits (usually 3) or two semesters' course credits (usually 6) may be awarded for a grade at or above the fiftieth percentile on a CLEP Subject Examination, as reported on the CLEP score report. Such credits are generally used to satisfy university distribution requirements or may be used as elective credits.

General Examinations
Credits may be awarded for a grade at or above the fiftieth percentile, subject to the following limitations: (1) English Composition is not accepted; (2) this credit can only be used to meet an open distribution requirement. It is especially important to consult the academic department and Office of the University Registar before signing up to take one of these tests.

Advanced Placement (Freshman Entrance)
Advanced Placement and college credit are awarded to students presenting Advanced Placement Examination grades of three or higher (four for credit in Psychology) in most AP fields. The Advanced Placement Examinations are offered by the College Entrance Examination Board. Such course credits may be used to satisfy degree requirements.

Some freshman students also enter the university with college credit already earned, many through the Massachusetts Dual Enrollment program.

Proficiency Challenge Examinations
Students transferring to the major in nursing, as well as certain other programs, may be asked to verify proficiency in some subjects taken earlier, through challenge examinations. Some examinations are departmentally administered, while others are provided through the CLEP program, mentioned above. Refer to the departmental sections in the *General Catalogue*; details will also be provided by the departments.

Military Service Training
For Military Service School training, credit may be awarded according to the recommendations contained in the most recent Guide to the Evaluation of Educational Experience in the Armed Services of the American Council on Education. These credits cannot be applied to the student's major field of studies. Additional information is available at the Office of Admissions.

Credit for Validated Prior Learning
The Division of Continuing Education offers credit for validated prior learning to those who have become regular, registered students. This program provides university academic credit for students in most majors who, through occupational or other experiences, have achieved the equivalent of college-level knowledge. Their prior learning is documented through a one-semester workshop and then evaluated for credit. For further information, consult the Division of Continuing Education.

SACHEM Cross-Registration
UMass Dartmouth students may cross-register for courses at other SACHEM (Southeastern Association for Cooperation in Higher Education in Massachusetts) institutions on a space-available, prior-approval basis. Likewise, students at these other institutions may cross-register for courses at UMass Dartmouth. Institutions involved in the program, in addition to UMass Dartmouth, are:

Bridgewater State College

Bristol Community College

Cape Cod Community College

Dean Junior College

Massachusetts Maritime Academy

Massasoit Community College

Stonehill College

Wheaton College.

Tuition and fees established by the "away" institution are suspended, provided that the matriculated student is a degree-seeking student at the home institution and carries and pays for a full-time load there. Further information and appropriate forms may be obtained in the Registrar's Office.

Outreach: Centers, Laboratories, Programs, and Events

Many special activities contribute to the university's mission and reflect its active roles in the region. The university takes very seriously its responsibility to make its intellectual resources accessible widely. Furthermore, the university is concerned to maintain an on-going relationship with its graduates and the families of its students. The university maintains many centers and laboratories that expand knowledge and contribute to economic development in the region.

Described here are various offices and programs which extend beyond the university's walls or reach out to others than the current student body. The listing is by no means exhaustive, but presents some key programs and offices that help the institution fulfill its broader purposes.

UMass Dartmouth Parents' Association
Formed in 1991, the UMass Dartmouth Parents' Association actively participates with university administrators and students to insure communication of ideas, to promote programs that benefit students, parents, and the university, and to act as a parents' support group. Every parent of a current UMass Dartmouth undergraduate student is automatically a member of the organization and is encouraged to offer financial as well as personal support to the activities of the Parents' Association.

Administrative liaison for the Association is provided through Susan Costa, Associate Vice Chancellor for Student Services (contact 508-999-8646 for further information).

UMass Dartmouth Foundation
The UMass Dartmouth Foundation encompasses both fund-raising and alumni relations activities. Through the Annual Fund and a variety of other fund-raising initiatives, the Foundation office helps provide annual and long-term support for the university.

The UMass Dartmouth Foundation is a separately-chartered, tax-exempt corporation governed by its own board of directors, which solicits, receives,
and administers gifts to the University and manages UMass Dartmouth's endowment, including funds devoted to specific purposes such as scholarships, faculty development, library support, and the like. The Foundation also seeks financial support for the University as well as non-monetary gifts, and assists with planned gifts and bequests.

Members of the University community who are aware of friends and alumni who might be of special help to UMass Dartmouth are encouraged to contact the UMass Dartmouth Foundation at 508 999-8760.

UMass Dartmouth Alumni Association
The alumni office provides communication and services for UMass Dartmouth's more than 28,000 alumni throughout the country and abroad. The UMass Dartmouth Alumni Association is the largest volunteer organization on campus, representing more than 28,000 former students in all 50 states and around the world. Serving as liaison between the university and its former students, the Alumni Association provides opportunities for people to get involved in shaping the future of their school. Contact the Alumni Affairs Office, Foster Administration Building, room 322 (or call 508-999-8031).

As students graduate, they are invited to remain actively involved in partnership with the university, through the Alumni Association. An earlier section of this *Catalogue* describes activities of the Association that especially involve current students.

Office of Grants and Contracts
The Office of Grants and Contracts addresses an important element of the university's mission: to foster research, scholarship, creative productions, and other professional activities by faculty and staff. The program accomplishes this mission by providing three basic services:

- Research and Information: assisting in the identifying of funding opportunities, maintaining current information on sources most responsive to the university's needs, and providing administrative support services on faculty research projects;
- Proposal Development and Submission: assisting in all aspects of proposal development and submission;
- Award Negotiation: negotiating and administering award contracts on behalf of the university. All post-award management is handled by the Fiscal Affairs Division of the university.

Today, the university administers approximately six million dollars in externally funded projects, including research, educational support, and training projects. In the past five years, the level of funding received by the university has tripled. The increase in level of activity has resulted in many benefits to the university, including added support for graduate programs, expanded opportunities for faculty research, and greater selectivity in the projects the university seeks and thus an enhanced relationship between research activities and the goals and purposes of the institution.

The Office of Grants and Contracts is located in the Foster Administration Building, room 011.

Office of Institutional Research
Institutional Research (IR) designs and manages an on-going process for institutional self-study to facilitate the university's mission. IR produces research information and analyses, provides strategic planning with a specific focus on outcomes assessment, undertakes special studies and implements results, conceptualizes and manges IR data systems, undertakes analysis of and makes recommendations on program and policy issues, and advises concerning projections and models to guide planning and management of resources.

The Office oversees preparation of reports required by the UMass system, state legislature, federal government, and other public and private organizations. Data collection and systematization are coordinated to improve data usefulness and quality. IR also works with the academic community on the evaluation and implementation of courses of action which will enhance students' learning and overall experiences at the university.

The Office of Institutional Research is located in the Foster Administration Building (508-999-9141).

Office of News and Public Information
The News and Public Information Office, in Room 306, Foster Administration, is the campus resource for reaching the outside world through the media. The office also publishes the weekly campus newsletter, *This Week at UMass Dartmouth*, and the monthly campus newspaper, the *UMass Observer*. Press releases announcing cultural, intellectual, and social events on campus are sent to newspapers, radio and television in local, regional and national distribution formats. Short feature stories about student achievements are sent to students' hometown newspapers.

The News and Public Information Office assists student, faculty, and staff organizations and individuals in publicizing upcoming events and newsworthy achievements. It also works closely with other advancement personnel, government officials, and agencies in promoting the university. It is located in the Foster Administration Building (508-999-9765).

Interdisciplinary Facilities

The university has superior **fine and design arts facilities** on both the main campus and the downtown New Bedford campus. Of special note are advanced facilities for textile design and weaving, including a state of the art CAD-CAM design interface linking textiles-arts design to mechanical production. Our large ceramics facility has been recently renovated. Computer laboratories offer students full access to contemporary media and means of production. Every graduate student in artisanry and design receives an assigned studio space.

In many ways, the university supports **innovative computing and distance learning**. Computer clusters provide access in locations across campus. In addition, rapidly developing facilities support distance learning, and our campus boasts a special emphasis on innovative cyber-education through the World Wide Web. There are many opportunities for graduate students not only to use these facilities but to become involved in their development. Initial contacts are as follows: for computing and distance learning, Dr. Robert Green, Associate Provost for Computing and Information Services, 508 999-8260; and for the Internet, Gregory Stone, Director, Internet Development and Webmaster, 508 636-4291; gstone@umassd.edu

A wide variety of **conferences and functions** occur on our campus. Our administrative office supporting these functions is the Conferences and Functions Office, which can be reached at 508 999-8130.

Centers and institutes at the university encourage and facilitate multidisciplinary and interdepartmental research and economic development activities. Listed below are examples of the variety of laboratories, centers, and institutes available for research, graduate education, and public service. Many specific resources and facilities are described later, in the program sections of this catalogue.

The **Center for Marine Science and Technology (CMaST)** has a broad mission of teaching, research, and economic development with faculty and staff engaged in basic and applied marine science and technology investigations. Continuing interdisciplinary research efforts are focused along cross-cutting themes: ocean predicting and monitoring systems; coastal zone systems; ocean communications, tracking and control; fisheries assessment management systems; and aquaculture systems development. A new area is research being conducted collaboratively with the Naval Undersea Warfare Center on unmanned underwater vehicles (UUVs). CMaST concentrates on the watersheds, embayments, and estuaries along the coastline of Massachusetts and the rest of New England, and on the waters of the adjacent U.S. Continental Shelf. This large area is an important natural laboratory because it is characterized by a great diversity of natural and anthropogenic environmental variability. It serves as the UMass System's gateway to the ocean.

CMaST is located on 2.6 acres of land in New Bedford along Clark's Cove which empties into Buzzards Bay. The facility is approximately 32,000 gross square feet and features 14 research laboratories, including a free-standing acousto/optic tank, and incorporates a 300 gallon/minute flow-through sea water system which provides ambient Buzzards Bay sea water to all laboratories and a large sea water tank room. In addition, it contains the following facilities: a) space to store and maintain marine organisms for use in research and teaching; b) instrumented acousto/optic test tank for research and experimentation in underwater acoustics, optics, and instrumentation; c) greenhouse for the growth and long-term maintenance of aquatic photosynthetic organisms under natural light; d) three temperature control rooms for long-term behavioral and physiological experiments and acclimation of marine organisms for culture and reproduction; e) 50-foot coastal **research vessel**, the R/V Lucky Lady; and f) dock for temporary mooring and off-loading of research vessels. Some support areas for the facility include a machine shop, a computer room, a radionuclide laboratory, a conference room equipped with state-of-the-art visual display capabilities and distance learning hardware, and a library/chart room.

The proximity of CMaST to Buzzards Bay, the fishing fleet of New Bedford, and other marine-oriented commercial, research, and educational institutions offers unique resources and opportunities and facilitates the creation of links with industry, governmental agencies, and other research and academic institutions. In light of its history, the university has been designated as **Center of Excellence in Marine Sciences** by the Commonwealth of Massachusetts.

Dr. Brian Rothschild is Director and Dr. Joseph Deck is DeputyDirector. Call 508 999-8925.

The goal of the **Northeast Regional Aquaculture Center** (NRAC) is to support aquaculture research, development, demonstration, and extension education to enhance viable and profitable U.S. aquaculture, which will benefit consumers, producers, service industries, and the American economy. NRAC is one of five Regional Aquaculture Centers established by the U.S. Congress and funded by the U. S. Department of Agriculture, Cooperative State Research, Education, and Extension Service (CSREES). The Northeast Regional Aquaculture Center develops communications and networking among the many educational, commercial, and state and federal institutions involved in aquaculture, and hosts conferences and workshops. The major function of NRAC is funding multistate projects in the 12 states of the northeastern U.S. The Executive Director, Dr. Kim Harrison, may be reached at 508 999-8157/8536. The Center's website address is www.umassd.edu/specialprograms/nrac

UMass Dartmouth has joined four different universities—the others located in the South—in membership in the **National Textile Center**. Our UMass Dartmouth Center has been awarded an initial $500,000 grant for textiles research, and the extent of funding is expanding. The grant funds research in the wide and expanding fields of textiles and fibers.

The **Advanced Technology and Manufacturing Center** brings together the teaching and research strengths of UMass Dartmouth

and the region's established and emerging industries, supporting the development of new ideas, technologies, and products. The Center has been allocated funding by the Commonwealth of Massachusetts to begin preliminary design to develop the "Kerr Mill" site in Fall River; site cleanup will commence this summer and construction of the Advanced Technology and Manufacturing Center building should commence soon thereafter. Comprehensive strategic planning activities are underway to match UMass Dartmouth expertise with industry needs. Contact the Director at 508 999-9116.

The **Family Business Center** offers support for family business owners through educational outreach, research, and information. Workshops, seminars, how-to books, and camps address issues from leadership succession to family teamwork. Contact the Director, John Bullard, at 508 999-8433.

The **Boivin Center for French Language and Culture** promotes teaching of, research about, and appreciation of French language and culture and seeks to promote an international perspective. Among its many projects is offering a certificate program in International Business/French. The Center is directed by Deborah Lee, professor in French, at 508 999-8344.

The **Center for Jewish Culture** works to increase understanding and communication between Jewish and non-Jewish people of southeastern Massachusetts through educational and cultural programs. It both publicizes existing functions and initiates workshops, lectures, seminars, and institutes that explore aspects of Jewish culture, and works to expand the Judaica collection in the library and to deve-lop a resource center for students, scholars, and lay people. The Co-Directors, Dr. Janet Freedman, Professor of Education, and Dr. Peter London, Professor of Art Education, may be contacted at 508 999-8290.

The **Arnold M. Dubin Labor Education Center** was established in 1975 to meet the educational needs of workers as members and leaders in the labor movement and promote understanding and cooperation between labor and business, religious, environmental, and other civic and community organizations. The Center provides non-credit courses, seminars, and special programs; offers support and consultation to the educational programs of labor organizations; provides workers and unions with technical and informational resources; serves as a liaison between the university and labor organizations on many levels including worker literacy, training, and economic development activity; and offers a Certificate in Labor Studies and job-related training through the Workplace Education Project. Contact José A. Soler, Director, at 508 999-8007; and for the Workplace Education Project, Lisa Jochim or Andrea Muller, Co-coordinators, at 508 999-4047.

The **Center for Policy Analysis** is a multidisciplinary research unit dedicated to the creation and dissemination of knowledge that facilitates economic, social and political development. The Center aims to enhance the economic and social well-being of citizens by providing research, information, and technical assistance to government, non-profit and educational agencies. The Center seeks to erode the walls between research and teaching by training students in the techniques of applied social science and by conducting University and community-based educational programs. The Director is Professor Clyde W. Barrow, at 508 999-8943.

The **Center for Portuguese Studies** coordinates and develops academic programs in Portuguese language, literature, and area studies; and develops interdisciplinary programs and services for the campus and community. The Center has received grant support from the Portuguese government and the Commonwealth of Massachusetts, the Camöes Institute, the Gulbenkian Foundation, the Luso-American Development Foundation, the local business community, and many friends of Portugal and of UMass Dartmouth. The Center is building a resource library and archive, and funds research, development, and educational projects. The Center hosts comprehensive summer institutes and a range of public and campus events through the academic year. Its Director, Dr. Frank Sousa, Professor of Portuguese, may be contacted at 508 999-8255.

The **Center for Teaching and Learning** has been newly organized to support a wide range of K-16 development and outreach activities. The Center for Teaching and Learning builds partnerships for educational excellence among the schools and communities of our region and UMass Dartmouth; provides leadership and sustained professional development to our region's educators at all levels, K-16+, emphasizing research-based, systemic implementation of educational reform, state of the art teaching, learning research, and educational technology; coordinates, focuses, and supports UMass faculty professional development activities; and works with regional educators K-16+ to support the deep systemic reform embodied in the Massachusetts Educational Reform Act, Curriculum Frameworks, and Curriculum Guides. Contact Dr. Barbara Steele, Executive Director, at 999-9182.

The **Center for Rehabilitation Engineering** was established to improve the quality of life of disabled individuals by the creative application of engineering knowledge and technology. The Center develops innovative rehabilitation equipment, techniques, and services and makes these available to agencies and individuals with disabilities. The continuing success of this organization is aided by the volunteer work contributed by students and staff. Professor Lester Cory of Engineering is the director; contact him at 508 999-6462.

The **Gerontology Center** is a multidisciplinary entity, without walls, dedicated to the development and maintenance of programs and courses in the field of gerontology. The Center strives to forge ties with the community at large, by conducting educational and research-based activities. The Gerontology Center works closely with the academic offerings in gerontology, a certificate and an academic minor described in the chapter of this catalogue on Interdisciplinary Programs. The Director of the Gerontology Center is Associate Professor Ora DeJesus. She can be reached at 508 999-8251.

The **School Management Center** seeks to promote school effectiveness by providing developmental opportunities for school managers. Workshops, seminars, and conferences conducted by local practitioners and national experts are sponsored to offer professional development. Contact the Department of Education at 508 999-8262.

The College of Business has re-established a former center, the Center for Business Competitiveness, as the **Center for Business Research** and appointed Nora Ganim Barnes, Professor of Marketing, as Director. This new Center will formulate a mission and initiate projects to serve the region during the 1999-2000 academic year. One may contact Dr. Barnes at 508 999-8756.

The selection that follows here features some programs and facilities that have had a long-standing association with the university. They, like many more short-term programs and events, contribute to the multitude of experiences the university offers to students, faculty and staff, and the greater community.

International Student Leadership Institute (ISLI)
Yearly the university offers this program from the University of Notre Dame to New England high school students. ISLI develops the leadership skills of the participants and encourages them to seek opportunities for personal advancement in the service of others. Students of the university participate as group leaders. Dr. Victor P. Caliri of Psychology (508) 999-8341 and John Fernandes (508) 999-8718 are the contact persons.

Musical Ensembles and Orchestras
Year-round the university sponsors musical offerings of a rich variety.

A series of on-campus concerts features the UMass Dartmouth Concert Band, Brass Ensemble, Jazz Ensemble, Stage Band, Symphony Orchestra, Pops Orchestra, and Chorus. Music Department faculty coordinate these concerts, in which students from all colleges of the university participate.

The UMass Dartmouth Music Guild sponsors a Guest Artist Series each semester, which features instrumental and voice performances and master classes from internationally-known artists. A highlight of the school year is the Jazz Festival. This program brings well-known jazz musicians to campus for residencies. The musicians conduct workshops and critiques for the students, culminating in a major public performance.

Robert F. Kennedy Assassination Archive
The Robert F. Kennedy Assassination Archive has achieved national recognition and usage as a unique and voluminous collection of police and FBI reports, audio and video tapes, transcripts, and private papers about the Robert Kennedy assassination. An enduring project of Political Science Professor Philip H. Melanson, the Archive stands as a major tribute to fundamental rights to information. The Archive is located in the Library Communications Center.

Small Business Institute
The Small Business Institute assists area businesses. UMass Dartmouth senior business students analyze smaller businesses and help the owners with any problems. Businesses ranging from restaurants to auto parts stores to wood stove manufacturers have benefited by the assistance of the Institute.

Speakers Bureau
UMass Dartmouth sponsors a Speakers Bureau that offers faculty to speak before school classes or groups, principally in grades seven through twelve, professional organizations or civic groups. Donald J. Mulcare, Professor of Biology, is the contact person for this project, at 508 999-8224.

Spotlight Program
This cultural enrichment program invites high-potential area high school students to experience a series of lectures and workshops during the academic year on the UMass Dartmouth campus. It is one of the activities of the UMass Dartmouth Projects for High Learning Potential. Professor Robert Piper of the Political Science Department is the contact person at 508 999-8036 or you may call the Program Assistant, at 508 999-8899.

Summer Events
UMass Dartmouth hosts a number of events in summers. The Fourth-of-July Celebration, complete with music, food, and fireworks, has become a popular annual event. A Cabaret Theater production runs every summer in our Commuter Cafeteria. A gala event is the August Musical, which produced "Brigadoon" in 1997 and "Anything Goes" in 1998.

Theater Company
The UMass Dartmouth Theater Company offers yearly at least a dozen presentations in which students may be joined by university staff or faculty and by community people as actors and technicians. Productions have ranged from classic plays and musicals such as *A Streetcar Named Desire* and *Oklahoma* to more contemporary offerings like *Steel Magnolias*.

Visual Arts Events, Film Series, and the UMass Dartmouth Art Gallery
Visiting artists are invited each year to the campus, where they offer workshops and critiques to art students and present exhibitions and shows that are open to the university and community. Students are encouraged to experience the contemporary art world through bus trips each semester to museums and galleries in Boston, Providence, New York, and Hartford.

An international film series is organized each semester by Dr. Charles White of the English Department, and videos of the films shown then become a permanent part of the library collection.

The UMass Dartmouth Art Gallery offers contemporary exhibitions which are often supplemented by video series and gallery talks. Student and faculty shows occur annually. The Gallery thus serves as a valuable extension of the classroom and enriches the artistic environment of the university and surrounding community.

Key to the Listings of Courses and Programs

Program Requirements

A general statement for each college is followed by separate descriptions of each department in the college and its programs. General requirements that apply to all students in a college are given in the section describing the college. Requirements specific to the programs follow in the sections devoted to each department.

Although the program requirements are presented in full detail, there are many aspects of program planning which will require each student to consult regularly with an academic advisor, and certain decisions require specific permission of the advisor.

Course Descriptions

Following the program descriptions and requirements is a listing of the courses from that department. To learn the selection of courses that is to be offered in any one semester or term, consult the semester *Course Listings* booklet available at the Office of the Registrar.

This catalogue uses a systematic format for course descriptions. *Two examples follow, with explanatory notes:*

	Notes
BIO 314 four credits	*1a, b*
General Ecology	*2*
3 hours lecture, 1 hour laboratory lecture, 3 hours laboratory	*3*
Prerequisites: BIO 121, 122	*4*

General ecology considers the general field of interrelationships between organisms and their environments with emphasis on the biology of populations, and includes laboratory and field studies of terrestrial, fresh water and marine environments. Extended field trips, some of which will be held on weekends and/or holidays, are an integral part of this course. *5*

ARH 150 three credits	*1a, b*
Studies in Visual Culture: Renaissance to Modern Art	*2*
Prerequisite: ARH 125 or permission by instructor	*4*

Surveys painting, sculpture, and architecture from the Renaissance to Impressionism. FOU 125 and 150 need not be taken in sequence. (Formerly ARH 102) *5*

1a

Department Designation and Course Number. Departments use a standard three-letter abbreviation to identify the department or field of the course; the courses shown are for Biology and Art History. The course number then identifies each course uniquely. The 100-level courses are introductory-level; 200, intermediate-level; 300 and 400, advanced and specialized-level; 500 and 600, graduate level. It is generally assumed that students may take the more advanced-level courses only with an appropriate foundation in the field, even if specific prerequisites are not stated.

1b

Number of Credits. Each course carries the number of credits specified. The more credits, the greater the obligation the course carries for in-class and out-of-class work. In courses that use the lecture or lecture-discussion format, there is a one-to-one relationship between the number of credits and the number of class contact hours each week (based on a 50-minute period per hour). See note 3, below.

2

Course Title. Each course is given a unique, descriptive title that indicates its topic and content.

3

Class Type and Contact Hours. Some courses use formats that differ from the lecture or lecture-discussion type. For example, the Biology course here exemplifies a combination of lecture and laboratory experiences. As shown, the number of class contact hours per credit may exceed the number for a class that uses the lecture or lecture-discussion formats only. When there is no annotation, the course uses the lecture or lecture-discussion format. The Art History course exemplifies this. Some course listings have a blanket annotation that applies to an entire sequence of courses.

4

Prerequisites. Stated here are any specific courses (or other requirements) that should have been completed satisfactorily as a condition for taking the course. Prerequisites ensure adequate preparation and maintain an appropriate order in the student's progression through the topics of study in the field. As stated above, even if specific prerequisites are not listed, generally students may take more advanced-level courses only with an appropriate foundation in the field. *Corequisites* are shown for some courses. These are like prerequisites but indicate another course or other experience that is to occur at the same time that the student takes the present course.

5

Course Description. The course description indicates the nature and scope of the course. Often, information is also given about the type of work for the course, as is shown in the Biology example. Course descriptions may close with a special-purpose annotation, as is the case with the Art History course; that annotation indicates a previously-used course number and informs the reader that this new course occupies a parallel role in the curriculum to that of the previous course and that their content is similar. Course descriptions do not indicate the status of a course to fulfill requirements of an academic program. For this information, *Catalogue* users should consult the program requirements listings.

For each course attempted, the course number, course title, and the number of credits are recorded on the student's transcript, together with the grade received.

Courses for General Education

Many different courses satisfy the various requirements of the General Education program. (General Education requirements are summarized in the Academic Regulations and Procedures section of this catalogue.)

Courses identified as Permanently Designated for a General Education requirement are identified in the catalogue's course listings by the following **Key**.

C	Cultural and Artistic Literacy
E	Ethics and Social Responsibility
G	Global Awareness
D	Diversity
I	Information and Computer Literacy, Advanced Course
M	Mathematics
S	Natural Science and Technology
W	Writing-Intensive Course
O	Oral Skills

A detailed listing of courses that satisfy these requirements is published separately from the catalogue.

College of Arts and Sciences

The programs of the College of Arts and Sciences offer students the theoretical and practical foundations for careers in the sciences, humanities, and social sciences, and develop the understanding that enables an informed and independent life.

Majors are offered in Biology, Chemistry, and Medical Laboratory Science (Bachelor of Science); Mathematics, and Multidisciplinary Studies (Bachelor of Arts or Bachelor of Science); and Economics, English, Foreign Literature and Languages (French, Portuguese, Spanish), History, Humanities/Social Sciences, Philosophy, Political Science, Psychology, and Sociology/Anthropology (Bachelor of Arts).

The College also offers minor programs that invite inquiry beyond the bounds of the traditional disciplines. These include: African and African-American Studies, Anthropology, Economics, English, Foreign Literature and Languages (French, German, Portuguese, Spanish), History, Judaic Studies, Labor Studies, Mathematics, Philosophy, Political Science, Sociology, and Women's Studies.

Although the University does not offer degrees in Education, Pre-Law, or Pre-Medical studies, students interested in Education can take courses leading to state certification, and those intending to enter medical school or law school can plan appropriate programs of study with the help of the Pre-Law or Pre-Medical Advisory Committee.

Since many Arts and Sciences students enter the university without yet knowing the specific fields in which they would like to major, the College offers the Liberal Arts Undeclared program. This provides students a flexible and well-rounded course of study in the Liberal arts and sciences, while also giving them time to discover their individual areas of interest and ability. Attention to the individual's goals and needs underlies the College's commitment to its students' success and satisfaction.

Requirements

All College of Arts and Sciences bachelor of arts candidates must complete the following courses and credits and meet the following requirements.

6 credits
Critical Writing and Reading
ENL 101, 102

6 credits
Literature (except English majors)
Literature in English, literature in a foreign language or foreign literature in translation. Departments of English and Foreign Literature and Languages shall specify which courses satisfy the requirements.

9 credits
Natural Science
Courses taught in Chemistry, Biology, Medical Laboratory Science, Physics.

9 credits
Humanities
The credits must not be taken in a student's major field. No more than 6 credits from any one field. Choose from History, Philosophy (including logic), Art History, Music (excluding applied courses), and culture and civilization courses in Foreign Literature and Languages.

12 credits
Social Science
The credits must not be taken in a student's major field. No more than 6 credits from any one field. Choose from Economics, Political Science, Psychology, and Sociology/ Anthropology.

Cross-listed courses may receive either social science or humanities distribution credit depending upon the discipline of the course with which they are cross-listed.

Department Requirements

Every student must complete at least thirty semester credits of work in the major field. For details see section under major program.

A sufficient number of courses must be elected so that the earned credits total a minimum of 120. Certain majors require more than 120 credits.

At least 30 credits must be in courses numbered 300 or higher, exclusive of experiential learning.

Foreign Language Requirement

All candidates for the Bachelor of Arts degree (including returning students and transfers from other universities, colleges, or community colleges) must satisfy a foreign language requirement in one of the following ways:

1.
Satisfactory score on the ETS Achievement Test, the Advanced Placement Test, the Advanced Placement Literature Test, the CLEP Examination, or the TOEFL Examination; the last two, when combined with a writing sample, an oral examination, and the written permission of the chairperson of the Department of Foreign Literature and Languages.

2.
Satisfactory performance in both oral and written UMass Dartmouth proficiency tests, if a student has fluency in French, German, Italian, Latin, Portuguese, or Spanish. No academic credits are awarded for satisfactory performance on this test. Proficiency tests are administered for all incoming students and transfers on Orientation dates. Proficiency tests are also administered in the Language Department during the academic year.

3.
Completion of a 202-level course in a language at UMass Dartmouth.

Exceptions:

1.
American Sign Language. ASL may be used to fulfill the foreign language requirement provided that the following conditions are also met:
a)
6 credits earned in Foreign Language courses at UMass Dartmouth (101 & 102)
b)
at least one additional course taught in English on the history, culture or literature of non-English speaking countries. Courses will be approved by the chair of Foreign Languages Department.

ASL certification at the intermediate level proficiency is accepted as a partial fulfillment of the foreign language requirement; however, no academic credits are awarded for ASL courses.

2.
Learning Disabled Students. Students who are certified by the Disabled Students Office as having difficulties in learning a foreign language may fulfill their requirement by taking two courses taught in English on the history, culture or literature of non-English speaking countries. Courses will be approved by the chair of the Foreign Languages Department, and are in addition to courses used to fulfill the college distribution requirements.

3.
Hardship cases. A formal mechanism exists whereby students may seek a reduction of the language requirement. The student must initiate the procedure with a written petition to the chairperson of the department. The final decision will be made by the dean of the College of Arts & Sciences on an individual basis. If a reduction is granted, the student must fulfill the remainder of the requirements with courses taught in English on the history, culture or literature of non-English speaking countries. Courses will be approved by the chair of the Foreign Languages Department, and are in addition to courses used to fulfill the college distribution requirements.

There is no provision for the waiver of the foreign language requirement.

A student who has received advanced standing or has satisfied the language requirement by passing the appropriate test or by a reduction must take the credit equivalent to attain the 120 credits needed for graduation.

Quality Requirement

A cumulative grade point average of at least 2.00 out of a possible 4.00 is required of all students. A grade point average of at least 2.00 is also required in courses in the major field. Individual departments may establish higher quality requirements.

Requirements

All College of Arts and Sciences bachelor of science candidates must complete the following courses and credits and meet the following requirements.

6 credits
Critical Writing and Reading
ENL 101, 102

6 credits
Literature
Literature in English, literature in a foreign language, or foreign literature in translation. The Departments of English and Foreign Literature and Languages shall specify which courses satisfy this requirement.

18 credits
Humanities/Social Science
These credits are to be taken from the areas of Humanities and Social Sciences listed below, with a minimum of six credits from Humanities and six from Social Sciences. The credits may not be taken in a student's major field.

Humanities

History

Philosophy (including Logic)

Art History

Music (excluding applied courses)

Foreign Language (excluding Literature)

Social Science

Economics

Political Science

Psychology

Sociology

Cross-listed courses receive either social science or humanities distribution credit, depending on the discipline of the course with which they are cross-listed.

Department Requirements and Free Electives

Every student must complete at least thirty semester credits of work in the major field. For details see section under major program.

A sufficient number of courses must be elected so that the earned credits total a minimum of 120. Certain majors require more than 120 credits.

At least 30 credits must be in courses numbered 300 or higher, exclusive of contract learning.

Quality Requirement

A cumulative grade point average of at least 2.00 out of a possible 4.00 is required of all students. A grade point average of at least 2.00 is also required in courses in the major field. Individual departments may establish higher quality requirements.

Interdisciplinary Courses for the Master of Arts in Teaching

Full course descriptions are available in the *Graduate Catalogue*.

Master of Arts in Teaching Core Courses

MAT 601 three credits
Curriculum Design and Implementation
Prerequisite: MAT enrollment or permission of instructor

A study of curriculum dimensions, concepts, design, and products for varied student populations and school settings.

MAT 603 three credits
Foundations of Education
Prerequisite: MAT enrollment or permission of instructor

A study of insights which various disciplines can offer to the discussion of major educational issues, policies, and trends.

MAT 605 three credits
Effective Research Methods

A study of the techniques and criteria for conducting and understanding effective research in the field of education.

MAT 606 three credits
Action-Based Research
Prerequisite: MAT 605 or equivalent

Survey of research on experimental, theoretical, or applied problem in education with particular emphasis on its practical application in the appropriate K-12 classroom.

MAT 609 three credits
Effective Instruction—Research Based Models
Prerequisite: MAT enrollment or permission of instructor

Translating the result of research into practical, usable, and theoretically sound strategies that teachers can implement in today's diverse classroom.

MAT 650 one credit
Seminar: Contemporary Issues in Teaching and Education

An investigation of current issues in education.

MAT 695 three credits
Internship

A fifteen week full-time classroom experience under the mentoring of university faculty and cooperating classroom teachers

MAT 699 three credits
Graduate Thesis
Prerequisites: MAT candidacy and MAT 605 or equivalent

Thesis research and writing.

Social Studies

Taught by faculty in History, Economics, Political Science, Psychology, or Sociology/Anthropology

SST 501 three credits
Reasoning and Discovery in Social Science

A review of how social scientists learn about the world, the methods, techniques, and reasoning process they use. How to bring elementary, middle and secondary school students to understand, appreciate and use this style of investigating and reasoning.

SST 511 three credits
Social Studies: Human Diversity
Prerequisite: MAT enrollment or permission of instructor

Racial, sexual, and ethnic diversity and the problems and opportunities social diversity presents.

SST 512 three credits
Social Studies: Work and the Labor Movement in America
Prerequisite: MAT enrollment or permission of instructor

The nature of work and the labor movement in industrial America.

SST 513 three credits
Social Issues: Energy & Environment
Prerequisite: MAT enrollment or permission of instructor

A study of the social aspect of the environmental problems associated with modern industrial society.

SST 514 three credits
Social Issues: Poverty and Hunger
Prerequisite: MAT enrollment or permission of instructor

A study of poverty and hunger in the midst of plenty as well as the various solutions offered for its relief.

SST 515 three credits
Social Issues of the Future
Prerequisite: MAT enrollment or permission of instructor

Examination of the idea of shaping future societies, their roots in the present and the past, and several models of the future.

Biology

The biology major provides opportunities for building the foundation of a career in one of the many specialties in private industry and in federal and state agencies which employ biologists.

Students planning to enter graduate school should, in consultation with their advisor, strongly consider electing a foreign language, analytic geometry and calculus. For those students interested in pursuing such broad fields of study as ecology, courses which stress computer literacy and database management are good foundation courses. Students looking toward such discipline as cell and/or molecular biology and developmental biology should take genetics, molecular and cell biology and biochemistry.

Modern biology requires a wide range of supporting courses in such other fields of study as statistics, computers, physics, chemistry, electronics, meteorology and geology. Student biology majors should consult with their advisors early in their program of study as to possible career choices and plan to take appropriate elective supporting courses for their selected field of study.

Faculty and Fields of Interest

Ronald A. Campbell parasitology, invertebrate zoology

Richard C. Connor marine mammal biology

Donald S. Douglas (chairperson) comparative physiology, general biology

Robert K. Edgar evolutionary biology, diatom systematics and ecology

Robert Griffith environmental physiology, vertebrate anatomy and physiology

Richard M. Ibara ecology and behavior of fishes, data analysis

Frederick Y. Kazama microbiology, cell biology, organismal biology

Robert Leamnson cell biology, molecular biology

Barton M. Matsumoto entomology, statistics

Sanford A. Moss animal behavior, ichthyology, vertebrate anatomy

Donald J. Mulcare developmental biology, gerontology, embryology

Nancy J. O'Connor invertebrate biology, larval biology, biofouling

Dorothy Read molecular biology, biotechnology

Katherine F. Russell anatomy and physiology, physical anthropology

James R. Sears systematics and ecology of marine algae, botany

Jefferson Turner biological oceano-graphy, marine plankton, biogeography

Biology Major
BS degree

Students may prepare for admission to medical, dental, and veterinary colleges and for admission to graduate work in the life sciences. Increasing numbers of students elect to major in biology as a means of providing themselves with a general framework of ideas concerning the interactions of living things. A substantial number of these students proceed toward vocational objectives that do not require a specialist's knowledge of biology.

Biology Major
Marine Biology Option

The marine biology option is designed to meet the needs of students who aspire to careers in ecology, marine biology, fisheries biology and biological oceanography. Students who elect the Marine Biology Option are urged to plan their program in close cooperation with their advisors. Facility in mathematics, chemistry and foreign languages is desirable. Russian, German or French is preferred as a language elective. Biology majors who choose the marine biology option have an opportunity to elect marine-oriented courses during their junior and senior years and must meet college degree requirements for the B.S. degree.

Requirements

First Two Years
(common to both options)

First Year		Semester Credits First	Second
BIO 121, 131	Biology of Organisms I with Lab	4	
BIO 122, 132	Biology of Organisms II with Lab		4
CHM 151, 152	Principles of Modern Chemistry	3	3
CHM 161, 162	Introduction to Applied Chemistry	1	1
ENL 101, 102	Critical Writing and Reading	3	3
MTH 101, 102*	Elements of College Mathematics	3	3
		14	**14**

* Math course to be selected in consultation with the advisor. MTH 111, 112 (Calculus) is recommended for students whose math background is good, and required for later entrance to graduate programs with a molecular orientation.
It is also a prerequisite for Physical Chemistry. MTH 111, 112 is required for PHY 113, 114 but can be taken concurrently with it.

Second Year			
BIO 210, 211	Biology of Populations with Lab		4
BIO 234, 244	Biology of Cells with Lab	4	
CHM 251, 252	Organic Chemistry	3	3
CHM 263, 264	Bio-organic Chemistry Lab	1	1
PHY 101, 102**	Introduction to Physics	3	3
	Humanities/Social Science Electives	6	6
		17	**17**

** PHY 107, 108 or PHY 113, 114 may be substituted for PHY 101, 102.

Third and Fourth Years
(common to both options)

Course selection for the third and fourth years of the biology major must be determined in consultation with an advisor. During the third and fourth year all majors are required to elect at least 18 credits in upper-division biology courses (courses numbered 300 or higher). Upper-division courses in physics, chemistry, engineering or mathematics may be substituted with the written approval of the advisor and the department chairperson prior to registration in the course. A maximum of 3 credits in biology proseminar may be included in the 18 credits. The requirements of the College of Arts and Sciences must also be met prior to graduation.

Students who have completed the first two years of the biology major may elect to concentrate in courses dealing with the ecology of the coastal zone, its estuaries and inshore waters.

Junior/Senior Electives for Marine Biology Option

Eighteen credits should be elected from upper-division biology courses. At least 12 of these credits must come from the following list of courses.

BIO 317	Biology of Invertebrates
BIO 413	Biology of Fishes
BIO 416	Biology of Algae
BIO 424	Biology of Animal Parasites
BIO 429	Aquaculture
BIO 454	Biology of Sharks
BIO 471	Marine Microbiology
BIO 517	Advanced Biology of Invertebrate Animals
BIO 531	Advanced Ichthyology
BIO 540	Environmental Physiology of Marine Animals
BIO 545	Biological Oceanography

Gen Ed note: Biology courses satisfy the Natural Science and Technology requirement. Those marked **S** below are appropriate for non-science/engineering majors.

BIO 101 three credits **S**
General Biology I
3 hours lecture

An introductory human biology course emphasizing energy flow and the function of cells and molecules, basic genetics, and selected aspects of human physiology.

BIO 102 three credits **S**
General Biology II
3 hours lecture
Prerequisite: BIO 101 or permission of instructor

Continuation of introductory biology with emphasis on the reproduction and genetics of organisms, their evolution, behavior, and interactions within ecosystems.

BIO 103 three credits **S**
Topics in Biology
3 hours lecture
Prerequisite: BIO 101 or permission of instructor

Study in specific areas of biological science such as Human Genetics, Microbes, and the Insect World. Not offered for credit to biology majors.

BIO 105, 106 three credits each **S**
Readings In Modern Biology I, II

Selected books and articles for the general public by scientists and science writers on ideas and research in modern biology. This is a course for non-majors focusing on two or three topics of current interest to biologists: evolution, human evolution, the human brain, genetics and the human genome project interaction of biology and society, and biodiversity. Other topics will be introduced as new books appear. Students will learn how to use the World Wide Web and library in preparing a term project in an area of personal interest.

BIO 111 four credits **S**
Introduction to Human Physiology
4 hours lecture

Introduction to the general physiological principles involved in human body functions with homeostasis as the unifying theme. Not offered for credit to biology majors.

BIO 112 three credits **S**
The Ocean Environment
3 hours lecture

The study of the ocean environment as an integrated ecosystem: The biology of marine organisms and the related physical, chemical and geological processes of the sea with attention given to the exploitation of marine resources and pollution. Not offered for credit to biology majors.

BIO 113 three credits **S**
The Darwinian Revolution (Honors)

An analysis of the claims, evidence and methods of Darwinian evolutionary biology based upon an examination of Darwin's *On the Origin of Species* (1st ed., 1859).

BIO 121, 122 three credits each
Biology of Organisms I, II
3 hours lecture

The first course for biology majors is an introduction to structure, function and behavioral adaptations in the world of living organisms. During the initial half of this two semester course cell origin, structure and chemistry, basic cellular physiology and genetics are emphasized. The second semester covers the diversity and evolutionary relationships of living organisms, culminating in an in-depth study of a selected ecosystem. Pre-professional aspects are emphasized during both semesters for the biology major student. Field experiences, writing and problem-solving are integrated into the course work.

BIO 125 three credits **S**
Horticulture

Integrates applied aspects of horticulture (plant propagation, cultivation, landscaping styles, soils, plant materials) with inquiries into the basic structure, reproduction and other life processes of plants. Work in the greenhouse provides an opportunity to put theoretical questions and topics into practice. Students will develop a sense of the value of plants and gardens in current society; an understanding of horticulture and its relationship to science, technology and arts; and the confidence to work successfully with plants, gardens and landscapes.

BIO 131, 132 one credit each
Biology of Organisms Laboratory I, II
1 hour laboratory lecture, 2 hours laboratory

The biology of organisms laboratory courses cover two semesters and are designed to provide the student with hands-on experience in investigative techniques and problem-solving. Students work closely with faculty and staff in specialized laboratory investigations in various biological disciplines.

BIO 154 three credits
Fundamentals of Biology
3 hours lecture
Prerequisite: Nursing major

Specifically designed to meet the needs and schedule of the nursing major, covering the breadth of biology in one semester. The ideology and approach of the biological sciences, the chemical and physical foundations of living systems, energy transformations, the origin and diversity of life, Mendelian and molecular genetics, evolution, and population and community ecology.

BIO 210 three credits
Biology of Populations
3 hours lecture
Prerequisites: BIO 121, 122, 131, 132, 234, 244

An introduction to the biology of groups of individuals of the same specific kind as units of evolutionary and ecological change: the characterization, origin, and maintenance of phenotypic and genetic variety and the selective and chance processes that shape this variation and effect adaptation, speciation, and the observed geographical and temporal distributions of different kinds of organisms.

BIO 211 one credit
Biology of Populations Laboratory
3 hours laboratory
Corequisite: BIO 210

Experimental approaches to selected topics in population biology are investigated by linking observations on laboratory populations with expectations generated by student-designed computer simulations using BASIC programming. Topics include selection, genetic drift, heritability, and spatial and temporal dispersion patterns.

BIO 216 three credits
Biology of Aging
3 hours lecture
Prerequisite: BIO 101 or equivalent

Presents the biological background to the aging process. This will include a description of the theories of aging and the developmental and physiological changes that occur throughout the aging process. Science elective for Liberal Arts students, free elective for Biology majors.

BIO 221 three credits
Anatomy and Physiology I
3 hours lecture
Prerequisite: BIO 101

A systematic study of the human body emphasizing structural and functional relationships. Topics include cellular activity and tissue organization. The skeletal, muscular and cardiovascular morphology and function are presented.

BIO 222 three credits
Anatomy and Physiology II
3 hours lecture
Prerequisite: BIO 221

Continuation of BIO 221. Study of the structure and function of the respiratory, digestive, nervous, urinary, endocrine and reproductive systems.

BIO 223 one credit
Anatomy and Physiology Laboratory I
1 hour laboratory lecture, 2 hours laboratory

Emphasis is placed on methods of measuring physiological processes. Study of body structure is accomplished by dissection of animal specimens and by use of tissue materials.

BIO 224 one credit
Anatomy and Physiology Laboratory II
1 hour laboratory lecture, 2 hours laboratory
Prerequisite: BIO 223

Continuation of BIO 223.

BIO 234 three credits
Biology of Cells
3 hours lecture
Prerequisites: two semesters Chemistry (concurrent enrollment or credit in Organic Chemistry recommended)

A study of energy transformations, gene expression and regulation, and the function of cells and their organelles. The course emphasizes how function follows structure, particularly at the level of macromolecules.

BIO 244 one credit
Biology of Cells Laboratory
1 hour laboratory lecture, 2 hours laboratory
Corequisite: BIO 234

A laboratory course emphasizing the biochemical, spectroscopic and microscopic procedures necessary to study cell function.

BIO 252 four credits
Medical Microbiology
3 hours lecture, 1 hour laboratory lecture, 2 hours laboratory
Prerequisites: college Chemistry and college Biology, or permission of instructor; open only to students enrolled in the College of Nursing

Fundamentals of microbiology are presented to prepare students interested in health science field. Topics included are basic microbiology, control of microorganisms, host resistance and pathogenic microorganisms.

BIO 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Terms and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

BIO 314 four credits
General Ecology
3 hours lecture, 3 hours laboratory
Prerequisites: Biology core; MTH 101, 102; CHM 151, 152, or permission of instructor

The principles and practices of the scientific discipline of ecology. Interactions among organisms and between organisms and their environment will be emphasized. Interactions will be described and analyzed at the organismal, population, community, and ecosystem levels. In the laboratory, students will use hypothesis-testing and experimentation to examine theoretical and empirical aspects of ecology.

BIO 316 three credits
Descriptive Oceanography
3 hours lecture

An introduction to the field of oceanography. Physical, chemical, geological and biological aspects are emphasized to provide a basic foundation for further work in biological oceanography.

BIO 317 four credits
Biology of Invertebrates
3 hours lecture, 1 hour laboratory lecture, 3 hours laboratory
Prerequisites: BIO 121, 122

This course presents an intensive survey of the taxonomy, taxonomy and functional morphology of the major invertebrate phyla, with special reference to adaptations of the intertidal marine invertebrates of the North Atlantic coast. Field trips to the diverse habitats of the area constitute an integral part of the laboratory.

BIO 318 four credits
General Entomology
3 hours lecture, 1 hour laboratory lecture, 2 hours laboratory
Prerequisites: BIO 121, 122

Introductory survey course in the study of insects. The taxonomy of families will be emphasized in lectures. Studies will also include the structure, habits, physiology and ecology of insects. During some laboratories, field trips will be conducted.

BIO 320 four credits
Embryology
3 hours lecture, 3 hours laboratory, 1 hour laboratory lecture
Prerequisite: Biology core

A description of reproductive and embryological principles, followed by a study of typical vertebrate and invertebrate embryology. The organogenesis of the major vertebrate systems will be described. The laboratory will include the microscopic study of vertebrate embryos and the observation of the development of selected living vertebrate and invertebrate embryos.

BIO 321 four credits
General Microbiology
3 hours lecture, 1 hour laboratory lecture, 3 hours laboratory
Prerequisite: Biology core

The nature and diversity of microorganisms. Special emphasis is placed on bacterial

Gen Ed note: Biology courses satisfy the Natural Science and Technology requirement. Those marked **S** below are appropriate for non-science/engineering majors.

cytology, nutrition, physiology, and growth. Topics on the significance of microorganisms in the environment and the evolutionary relationships of microorganisms are included.

BIO 330 (PHL 330) three credits
Evolutionary Approaches to Epistemology
Prerequisites: BIO 113, 210, 437 or equivalent; and PHL 301 or equivalent

A critical exploration of the interaction between Darwinian evolutionary biology and traditional epistemology and the impact of the two fields on one another. The course will demonstrate, with the students as active participants, the nature and fertility of an interdisciplinary inquiry.

BIO 333 four credits
General Genetics
3 hours lecture, 1 hour laboratory lecture, 3 hours laboratory
Prerequisite: Biology core

Introduction to the science of heredity. The lectures present an integrated concept of the gene provided from the study of Mendelian and molecular genetics. Selected topics in quantitative inheritance, and human genetics are included.

BIO 350 four credits
Survey of Plant Kingdom
3 hours lecture, 1 hour laboratory lecture, 3 hours laboratory and field trips
Prerequisite: One year of Biology of Organisms or equivalent

The phylogenetic relationship among members of the plant kingdom, with an emphasis on evolutionary trends among plant groups rather than on individual plant species. Toward this goal the cytology, anatomy and morphology of monerans through the angio-sperms will be covered. Representatives of most groups will be studied in the laboratory and some will be observed in their natural habitats during two field trips.

BIO 370 four credits
Animal Physiology
3 hours lecture, 1 hour laboratory lecture, 2 hours laboratory
Prerequisites: Biology of Cells (or equivalent); Organic Chemistry

A study of the general principles of animal physiology integrating molecular, cellular, organ system and whole organism approaches. The accompanying laboratory will provide skill in the techniques used in animal physiological investigations.

BIO 411 one to three credits
Proseminar: Current Topics in Biology
1 to 3 hours

Students with senior standing (or others with consent of the instructor) report on and discuss current biological problems as presented in principle journals, abstracts and reviews. The work of each seminar is usually built upon a single unifying content area.

BIO 413 four credits
Biology of Fishes
3 hours lecture, 1 hour laboratory lecture, 3 hours laboratory
Prerequisites; BIO 121, 122

Field trips and extensive laboratory work are emphasized in this course. The life histories, ecology and classification of the fishes of the coastal and inland waters of the northeastern states are studied in detail.

BIO 415 four credits
Comparative Vertebrate Anatomy
3 hours lecture, 1 hour laboratory lecture, 2 hours laboratory

Structure and phylogeny of vertebrates. Laboratory work illustrates evolutionary trends and specializations.

BIO 416 four credits
Biology of Algae
3 hours lecture, 1 hour laboratory/lecture, 3 hours laboratory
Prerequisite: One year of Biology of Organisms or equivalent

The freshwater and marine algae of the northeastern United States, surveyed with an emphasis on their taxonomy, evolution and ecology. The laboratory focuses upon the identification, morphology and ecology of all major algal groups. Extended field trips into Buzzards Bay, Vineyard Sound, and the north shore are an integral part of the course.

BIO 419 four credits
Biological Scanning Electron Microscopy
1 hour lecture, 6 hours laboratory
Prerequisite: Permission of instructor

Theory and techniques of scanning electron microscopy, including optical theory, photographic darkroom techniques, and specimen preparation. Students will be expected to complete a project, the results of which will be presented in written and finished photographic form.

BIO 421 four credits
Developmental Biology
3 hours lecture, 1 hour laboratory lecture, 3 hours laboratory
Prerequisite: Biology core, especially biology of cells

The molecular, cellular and morphogenetic aspects of embryology, organogenesis and other developmental phenomena of animals are considered in the lecture. Some aspects of plant development are discussed. The laboratory includes experiments that demonstrate the morphogenetic activities of the cell. Students are encouraged to design their own experiments.

BIO 422 three credits
Immunology
3 hours lecture
Prerequisites: BIO 234 or equivalent, CHM 251

Molecular and cellular basis of immune phenomena with emphasis on experimental foundations of current models. Differentiation of T and B lymphocytes, cell-cell interactions, antibody structure and function with underlying genetic rearrangements, mechanisms of resistance to disease and immune dysfunction, including AIDS. Understanding of research techniques and research process is promoted.

BIO 424 four credits
Biology of Animal Parasites
3 hours lecture, 1 hour laboratory lecture, 2 hours laboratory

An introductory course in parasitology emphasizing the more important protozoan, helminth, and arthropod parasites of medical, veterinary, and marine significance. Laboratory exercises include practical and experimental techniques.

BIO 427 three credits
Molecular Biology
3 hours lecture
Prerequisites: BIO 234, 244

The methods and research that support models of cell function at the molecular level. This three credit lecture course will present current advanced research methods in molecular biology—those used to study the expression and regulation of genes, and

the laboratory research on the macromolecules involved. Students will read and paraphrase current literature in the field of molecular biology.

BIO 429 four credits
Aquaculture
3 hours lecture, 3 hours laboratory
Prerequisites: Biology core, BIO 314, BIO 317, BIO 413, or BIO 416, or permission of instructor

The study of aquaculture in a global context with emphasis upon a few selected forms to serve as working models. The course includes a consideration of both theoretical and practical aspects of aquaculture. Whenever possible, the laboratory work will emphasize hands-on experience in laboratory and field aquaculture techniques. A student team approach will initiate, develop and/or maintain an aquaculture project.

BIO 430 four credits
Introduction to Biological Statistics
3 hours lecture, 1 hour laboratory lecture, 2 hours laboratory
Prerequisite: MTH 101, 102 or equivalent, upper division biology standing

Statistical concepts for the planning of experiments and the summarization of numerical data. Lectures emphasize probability, testing of hypothesis and the application of different, statistical concepts and problems.

BIO 435 three credits
Methods and Materials for Secondary School Teachers of Biology
Free elective credit only
Hours will be arranged

This course is designed for future teachers of biology. The course emphasizes modes of inquiry, methods of research and experimentation, and teaching strategies.

BIO 437 three credits
Evolutionary Biology
3 hours lecture
Prerequisites: Biology Core

An overview of contemporary evolutionary biology with an emphasis on evolutionary processes. A non-introductory study of the interplay in time and space of genetic variety, ecological opportunity and chance resulting in the evolutionary change in groups of organisms.

BIO 438 one credit
Evolutionary Biology Laboratory
3 hours laboratory
Prerequisites: Biology Core
Corequisite: BIO 437

Computer models of aspects of evolutionary processes will be designed. The models will selectively address problems in such areas as selection and polygenic inheritance, genetic drift, concerted evolution in multigene families, differentiation of protein-coding nucleotide sequences, molecular clocks, sex, stochastic processes in macroevolution and wild animal conservation genetics. A Biology of Populations-level (BIO 211) knowledge of BASIC programming is expected.

BIO 440 two credits
Research Project
Hours will be arranged.

An advanced research project in an advanced student's field of general interest conducted under the supervision of an appropriate staff member, in the form of independent research leading to the solution of a problem.

BIO 441 two credits
Research Project

Continuation of BIO 440.

BIO 442 three credits
Advanced Genetics
3 hours lecture
Prerequisite: BIO 337 or 333

A historical perspective of the concepts leading to the present theory of gene structure and function. The rigorous experimental evidence supporting this synthesis is reviewed by extensive reading and discussion of original publications. Particular emphasis is placed on papers published since 1940 and having direct bearing in elucidating the structure and function of the gene.

BIO 452 three credits
Virology
Prerequisites: BIO 234, 244 or permission of instructor

Nature of the virus as both an evolutionary entity and an obligatory cellular parasite. The structure and replicative strategies of representative viruses are studied. The approach is molecular and stresses the interaction of the viral genome with cytoplasmic and nuclear elements of the host cell.

BIO 454 three credits
Biology of Sharks
Prerequisite: Permission of instructor

The morphology, physiology, behavior and evolutionary history of the most ancient group of living jawed fishes. The most unusual aspects of these fish, such as modes of reproduction, osmotic regulation, feeding mechanisms and sensory physiology, will be stressed throughout.

BIO 471 four credits
Marine Microbiology
3 hours lecture, 1 hour laboratory lecture

Taxonomy, physiology, and the role of heterotrophic microorganisms in the marine environment. The viruses will also be considered. Emphasis will be placed on the activities of the viruses, bacteria, and the fungi in the marine environment in the laboratory, exercises will be conducted on the methods of enumeration, detection of selected physiological groups, uptake and deputation of microorganisms by shellfish, marine biodeterioration, and the influence of environmental parameters on the growth and activities of marine microorganisms.

BIO 495 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Terms and hours to be arranged.

BIO 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Terms and hours to be arranged.

Graduate Courses in Biology

Note: Some graduate courses may be open to undergraduates. Please consult your department chairperson. See the *Graduate Catalogue* for graduate general and program requirements.

BIO 509 one or two credits
Directed Study in Biology
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Terms and hours to be arranged.

BIO 510 four credits
Marine Biotechnology

Designed for persons who wish to participate in research and development within biotechnology. This course features extensive hands-on laboratory work with current techniques and experimental approaches, integrated with an exposition of the principles underlying the techniques.

BIO 511 one to three credits
Graduate Seminar in Biology
1 to 3 hours in varied formats

Selected topics in Biology. In recent years these have included larval biology, estuarine ecology, morphometrics, genome evolution, and phylogenetic systematics and evolutionary ecology.

BIO 513 four credits
Biology of Fishes

See BIO 413.

BIO 515 four credits
Biology of Algae

See BIO 416.

BIO 518 three credits
Biogeography
Prerequisite: senior or graduate standing

The study of present and past global distributions of plant and animal taxa in terrestrial, marine and freshwater habitats. Distributional patterns will be considered in relation to changes of the physical environment over geological time, such as in global patterns of climate and resources. The evolution of recent association of organisms will also be examined in relation to ecological interactions between organisms, such as competition and predation.

BIO 520 three credits
Animal Behavior
Prerequisite: graduate standing and consent of instructor

The study of comparative and evolutionary aspects of behavior of invertebrate and vertebrate animals. Structure and function of nervous systems, simple behavioral patterns including reflexes and other forms of innate behavior as well as more complex patterns including learning and social behavior are stressed.

BIO 522 four credits
Experimental Embryology
2 hours lecture, 6 hours laboratory
Prerequisite: Developmental Biology or consent of instructor

Reviews current concepts of development. The laboratory investigates classical and recent experiments and encouraged individual projects in plant and animal development.

BIO 524 four credits
Biology of Animal Parasites

See BIO 424.

BIO 525 one credit
Graduate Student Seminar
Prerequisite: graduate status

Each student will present a seminar related to the current semester's theme and based on several contemporary publications. Students are responsible for preparing a comprehensive bibliography, an abstract, and evaluations of peers' seminars.

BIO 526 four credits
Marine Benthic Ecology
3 hours lecture, 3 hours laboratory
Prerequisite: graduate standing or permission of instructor

An advanced overview of the structure and function of marine benthic communities from the intertidal zone to the deep sea, focusing on the power of experimental studies in elucidating ecological processes. Students will improve writing skills via preparation of short research proposals a term paper, and through peer review of other students' work. Students will also lead discussions of journal articles, and plan, undertake, and present the results of a field biofouling study.

BIO 527 three credits
Molecular Biology

See BIO 427. In addition, graduate students will present two typical reviews of current problems in molecular biology. These reviews will be presented both as written expositions and as interactive lecture presentations to other class members. Pre- and post-presentation interviews with the instructor will constitute a part of the course requirement.

BIO 531 four credits
Advanced Ichthyology
3 hours lecture, 3 hours laboratory
Prerequisite: graduate standing or consent of instructor

Studies of fish phylogeny and classification, physiological problems peculiarly faced by fish, and aspects of fisheries' hydrography. The laboratory stresses independent work on the structure of fish populations, measurement of physiological parameters, and morphometric analysis.

BIO 535 three credits
Analysis of Biological Data
3 hours lecture, 2 1-1/2 hour laboratory meetings
Prerequisite: introduction to biological statistics or equivalent

The processing and analysis of biological, and especially ecological data. Topics include problems encountered in processing and handling of data, distributions and transformations, associations, computer simulations, parametric and non-parametric methods, and usefulness and limitations of multivariate methods.

BIO 536 four credits
Estuarine Ecology
3 hours lecture, 3 hours laboratory
Prerequisite: graduate standing or permission of instructor

An overview of biological, geological, physical, and chemical factors and processes important for organisms in estuarine environments. Emphasis is on contemporary research areas, including human impacts in estuaries. Students will design, perform, analyze and present the results of semester-long field projects characterizing a local salt-marsh ecosystem.

BIO 537 three credits
Evolutionary Biology

See BIO 437.

BIO 538 one credit
Evolutionary Biology Laboratory

See BIO 438.

Note: Some undergraduate senior-level courses are offered to graduate students under a corresponding 5xx number, with concurrent enrollment but additional work expectations.

BIO 540 four credits
Environmental Physiology of Marine Animals
3 hours lecture, 3 hours laboratory
Prerequisites: graduate standing or consent of the instructor. Both Physiology and Ecology are highly recommended.

The physiological mechanisms of adaptation to the variety of ecological parameters in the marine environment that result in stress in marine animals. The potential effect of environmental perturbations on these physiological adaptations will also be considered. The laboratory encourages independent projects leading to the preparation and presentation of a research paper.

BIO 545 four credits
Biological Oceanography
3 hours lecture, 2 hours laboratory

The cycle of productivity in the marine environment and the physiological and morphological adaptations of plant, animal and bacterial populations within various oceanic regions. Interrelationships of the plankton, the nekton, and the benthos are stressed.

BIO 546 four credits
Biology of Marine Larvae
Prerequisite: graduate standing or permission of instructor
3 hours lecture, 3 hours laboratory

An analysis of factors important for animals with complex life cycles, focusing on marine benthic invertebrates. Larval stages will be examined from a wide range of perspectives: ecological, evolutionary, oceanography, behavioral, physiological, and developmental. Students will hone verbal skills through presentations on species and topics of interest to them, and by leading class discussion. The laboratory will examine larval types and aquacultural techniques.

BIO 552 three credits
Virology

See BIO 452.

BIO 571 four credits
Marine Microbiology

See BIO 471.

BIO 593 one to three credits
Graduate Research Project
Prerequisite: Graduate standing or consent of instructor

Directed research for graduate students, hours by arrangement. Graded A-F.

BIO 595 three credits
Graduate Independent Study
Prerequisites: Upper-division standing; permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Terms and hours to be arranged.

BIO 596 three credits
Graduate Directed Study
Prerequisites: Permission of the instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Terms and hours to be arranged.

BIO 599 not to exceed ten credits
Graduate Thesis

Terms and hours to be arranged.
Graded A-F.

Chemistry and Biochemistry

Undergraduate chemistry at UMass Dartmouth provides the student with the theoretical and practical expertise necessary for success in a wide variety of careers, consistent with the nature of chemistry as the central science. Chemists pursue a broad spectrum of rewarding professional careers ranging from production supervisors in the chemical or petroleum industries to physicians and patent attorneys. The Department is professionally accredited by the American Chemical Society and provides individualized attention and instruction usually encountered only in a small-college setting. Class sizes, especially at the junior and senior levels, are usually small, affording the student ample opportunities for interaction with the faculty.

Teaching and research facilities of the Department of Chemistry and Biochemistry are equipped with modern instrumentation. Recent acquisitions include a Bruker 300MHz FT-NMR, a Bruker Vector 22 FT-IR Spectrometer, a Fluoromax-2 Fluorescence Spectrometer, a Microcal Microcalorimeter, a Midac M-2000 FT-IR with modified cell for protein analysis, a JASCO J-175 Circular Dicroism Spectrometer, a Finnigan MAT 4500 TSQ GC/MS/MS/DS Mass Spectrometer, a Finnigan MAT Isotope Ratio Mass Spectrometer, a Perkin-Elmer Atomic Absorption Spectrophotometer, an Instrumentation Lab. Flame AA/AE Spectrometer, several high performance liquid chromatographs, several UV-V Visible spectrometers, a Sippican/NRL Optical Fiber-Optic based Biosensor, a Cynosure SLL250 Dye Laser Spectrometer, A Antek Nitrogen Analyzer, a two spectrofluorometers, a Pharmacia Biotech Electrophoresis, a Jordan Scientific DNA Sequencer, a Amicon Dialyzer/Protein Concentrator, an BAS 100BW3113300 Electrochemical Work Station. This new instruments augments existing equipment, which includes infrared, UV-Visible, atomic absorption NMR and mass spectrometers, a differential scanning calorimeter, a capillary gas chromatography, preparative and analytical gas and liquid chromatographs, ultra centrifuges, a voltametric analyzer, a scintillation counter, microtiter plate reader and washer, Parr hydrogenation apparatus, electroanalytical instrumentation and related apparatus for chemical and biochemical research. In addition, an electronics shop and electron microscope facilities are shared with other science departments.

The Department, consistent with university policies, emphasizes computer use. The Department maintains a variety of computers and accessories, including IBM and Macintosh microcomputers, terminals, plotters, and printers. The university maintains two Alpha 2100s (Model 4/275) and an Alpha 2000 (Model 4/200) for library research and instructional use. These Alpha computers provide 64 gigabytes of disk storage, operate on an FDDI network, and are full partners in our campus network.

The Department of Chemistry and Biochemistry at UMass Dartmouth also offers a graduate program leading to the degree of Master of Science in Chemistry. In conjunction with UMass Amherst, this department offers a cooperative Ph.D. program and, in conjunction with UMass Lowell, offers a joint Ph.D. program.

Faculty and Fields of Interest

Mark A. Altabet marine chemistry, geochemistry, biogeochemistry

Alan H. Bates inorganic and organometallic chemistry

Russell R. Bessette electroanalytical chemistry and high energy density, high capacity battery systems

Donald W. Boerth (chairperson) physical organic chemistry, theoretical chemistry

Joseph C. Deck chemical education

William L. Dills, Jr. biochemistry of carbohydrates, metabolism and metabolic effects of carbohydrate analogues

James A. Golen physical inorganic chemistry, synthesis and molecular spectroscopy of inorganic compounds

Gerald B. Hammond organic chemistry, organofluorine chemistry, natural products, ethnomedicinal chemistry

Madhumati Mahalingam physical chemistry, general chemistry

Michele I. Mandrioli transition metal chemistry and magnetic resonance

Catherine C. Neto inorganic/organic chemistry

Emmanuel C.A. Ojadi chemical physics, laser spectroscopy and photochemistry

John Schaumloffel analytical and environmental chemistry

Bal-Ram Singh physical biochemistry, structure-function relationships of biological macromolecules

J. Donald Smith biochemistry of phospholipids and phosphonic acids, metabolic regulation

Timothy C. K. Su physical chemistry, ion-molecule reactions, mass spectrometry

Margaret A. Wechter analytical radiochemistry, high performance liquid chromatography of fuel components

Chang-Ning Wu organic chemistry, polymer synthesis and characterization, and liquid crystal compounds

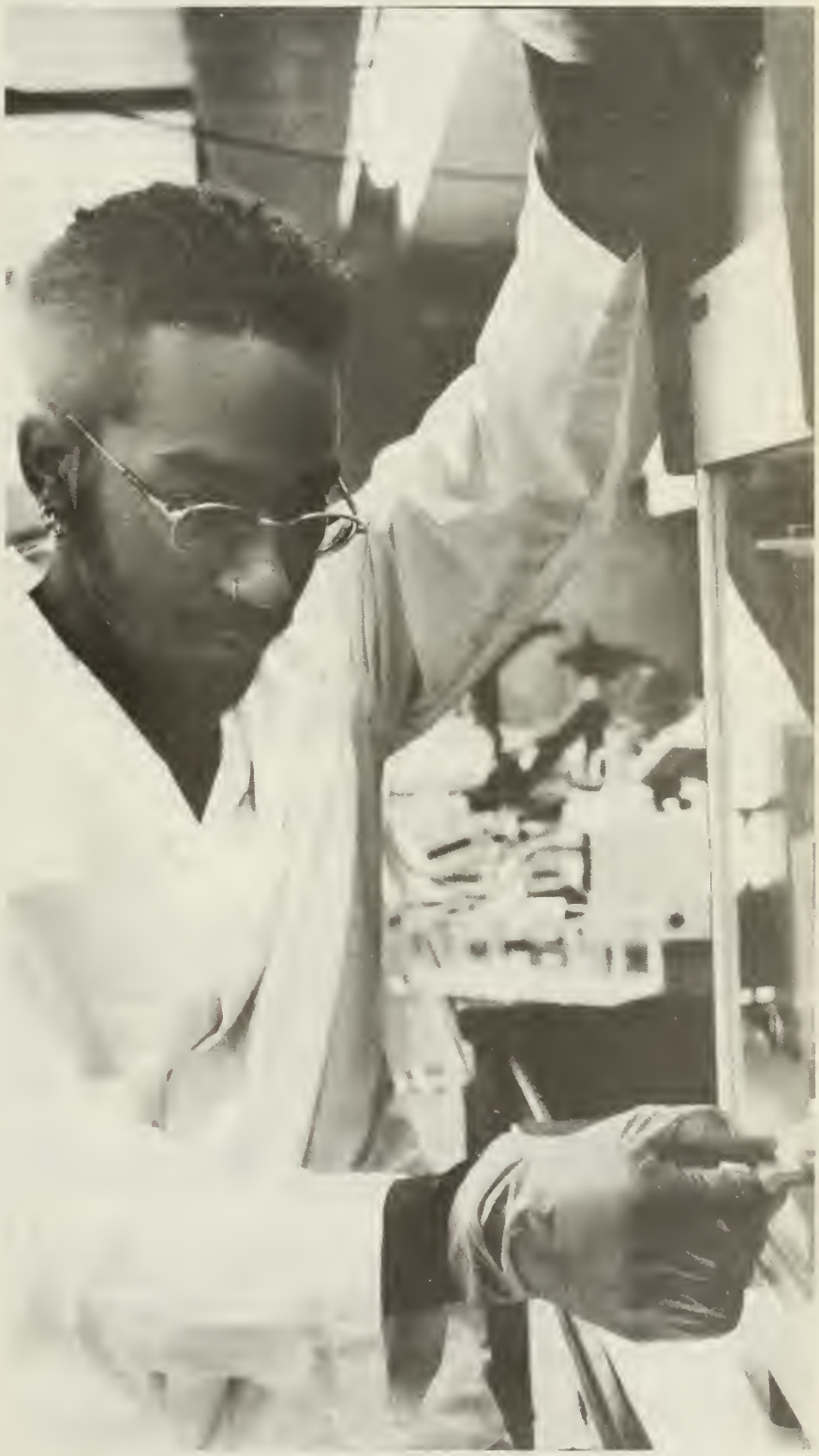
Yuegang Zuo analytical and environmental chemistry

Chemistry Major
BS degree

The programs for chemistry majors are designed to provide a solid foundation in the theoretical knowledge and practical laboratory skills necessary for a variety of professional careers. The programs prepare students for graduate study, medical or professional school, teaching, technical sales, technical writing, and industrial or government employment.

In order to fit the needs of the individual student, the department offers to chemistry majors four different options. The courses prescribed for each of these options and the career opportunities available upon completion of each major are described below.

Requirements for each option are shown on the following pages.



Chemistry Major
Chemistry Option

Requirements

This option prepares a student for graduate work in various fields of chemistry both pure, such as organic, inorganic, physical, analytical, or biochemistry; and applied, such as clinical, forensic, polymer, marine, or environmental chemistry. It may also be supplemented by graduate work in an entirely different area such as law, library work, or business, leading to a career as a research chemist, chemical patent attorney, librarian, science illustrator, technical writer, or executive in the chemical industry. In addition, this option will prepare a student for employment in the chemical industry as a chemical technician, salesperson, purchasing agent, market analyst, production supervisor, etc., or in education as a secondary school teacher. A number of free electives are included to provide flexibility in the program to suit the student's special interest.

		Semester Credits	
First Year		**First**	**Second**
CHM 151, 152	Principles of Modern Chemistry	3	3
CHM 165, 166	Introduction to Experimentation	2	2
CHM 172	Introduction to Computer Applications for Chemists		1
MTH 111, 112	Analytical Geometry and Calculus I, II	4	4
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Humanities or Social Science[1]	3	3
		15	**16**
Second Year			
CHM 251, 252	Organic Chemistry I, II	3	3
CHM 265, 266	Organic Chemistry Lab I, II	2	2
MTH 211	Analytical Geometry and Calculus III	4	
CHM 272	Descriptive Inorganic Chemistry		4
PHY 113, 114	Classical Physics I, II	4	4
	Humanities, Social Science or Literature	3	
	Free Elective		3
		16	**16**
Third Year			
CHM 305	Modern Methods of Chemical Analysis	3	
CHM 307	Procedures of Chemical Analysis	2	
CHM 315, 316	Physical Chemistry I, II	4	4
CHM 318	Physical Chemistry Measurements I		2
CHM 422	Computer/Math Methods in Physical Science[3]		3
	Humanities, Social Science or Literature	3	3
	Free Electives	3	3
		15	**15**
Fourth Year			
CHM 319	Physical Chemistry Measurements II	2	
CHM 401, 402	Chemistry Seminar	1/2	1/2
	Humanities, Social Science or Literature[1]		6
	Advanced Chemistry Electives[2]	6	3
	Free Electives	6	6
		14 1/2	**15 1/2**
		Total credits:	**123**

[1]The Humanities/Social Sciences requirement of 18 credits must consist of at least 6 credits of Humanities and 6 credits of Social Sciences. Note that there is no separate foreign language requirement for the BS degree. Literature requirement: 6 credits. Literature must be in the English language.

[2]Students who wish to be certified by the American Chemical Society must include among their advanced chemistry electives CHM 552, CHM 431, and CHM 433. Students who elect to do senior research may count either CHM 491 or CHM 492 toward certification. Similarly, students may receive certification credit for one term of the 400-level biochemistry sequence. The ACS also recommends that some advanced course work be in polymer chemistry.

[3]Any of the following combinations of courses fulfill the CHM 422 requirement: MTH 212 (or MTH 204) and PHY 234; MTH 212 (or MTH 204) and MTH 221 or 227; MTH 212 (or MTH 204) and EGR 301. Students who fulfill the requirement by taking one of these alternative course combinations may not receive additional credit for CHM 4/522.

Chemistry Electives

CHM 352 Organic Preparations
CHM 362 Introduction to Biochemistry
CHM 411 Biochemistry I
CHM 412 Biochemistry II
CHM 414 Biochemistry Laboratory
CHM 421 Organic Mechanisms
CHM 426 Polymer Synthesis and Characterization
CHM 431 Principles of Inorganic Chemistry
CHM 432 Organic Analysis
CHM 433 Inorganic Chemistry Laboratory
CHM 444 Applied Spectroscopy
CHM 491 Introduction to Research I
CHM 492 Introduction to Research II
CHM 510 Advanced Organic Chemistry
CHM 511 Biochemistry I
CHM 512 Biochemistry II
CHM 520 Advanced Inorganic Chemistry
CHM 521 Organic Mechanisms
CHM 523 Thermodynamics
CHM 525 Theoretical Organic Chemistry
CHM 526 Polymer Synthesis and Characterization
CHM 527 Electronic Structure of Atoms and Molecules
CHM 529 Physical Biochemistry
CHM 531 Chemical Kinetics
CHM 533 Statistical Mechanics
CHM 542 Quantum Chemistry
CHM 544 Applied Spectroscopy
CHM 550 Special Topics in Chemistry
CHM 551 Electroanalytical Chemistry
CHM 552 Instrumental Methods of Analysis
CHM 553 Nuclear and Radiochemistry
CHM 554 Molecular Spectra and Structure
CHM 555 Methods of Chemical Separation
CHM 556 Magnetic Resonance Spectroscopy
CHM 560 New Synthetic Methods
CHM 562 Natural Products

Chemistry Major
Biochemistry Option

The biochemistry option for the BS degree in chemistry is designed for those students with dual interests in biology and chemistry. A student receiving this degree will be qualified to enter industry as a BS biochemist or, with the selection of several education courses, will be well qualified as a high school science teacher. Students with the biochemistry option will be able to enter graduate school in any of the areas of chemistry, biochemistry, molecular biology, pharmacology, nutrition or other life science programs. The following curriculum conforms to that recommended by the American Society of Biochemistry and Molecular Biology for an undergraduate degree in biochemistry.

Requirements

		Semester Credits	
First Year		**First**	**Second**
CHM 151, 152	Principles of Modern Chemistry	3	3
CHM 165, 166	Introduction to Experimentation I, II	2	2
CHM 172	Introduction to Computer Applications for Chemists		1
MTH 111, 112	Analytical Geometry and Calculus I, II	4	4
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Humanities or Social Science[1]	3	3
		15	**16**
Second Year			
CHM 251, 252	Organic Chemistry I, II	3	3
CHM 265, 266	Organic Chemistry Lab I, II	2	2
MTH 211	Analytical Geometry and Calculus III	4	
BIO 234	Biology of Cells[2]	3	
BIO 244	Biology of Cells Lab[2]	1	
PHY 113, 114	Classical Physics I, II	4	4
	Humanities, Social Science or Literature[1,3]		6
		17	**15**
Third Year			
CHM 315, 316	Physical Chemistry I, II	4	4
CHM 411, 412	Biochemistry I, II	3	3
CHM 414	Biochemistry Laboratory[4]		3
CHM 305	Modern Methods of Chemical Analysis	3	
CHM 307	Procedures of Chemical Analysis	2	
	Free Elective		3
	Humanities, Social Science or Literature[1]	3	3
		15	**16**
Fourth Year			
CHM 529	Physical Biochemistry	3	
CHM 401, 402	Chemistry Seminar	1/2	1/2
	Biology/Chemistry Electives	6	3
	Humanities, Social Science or Literature[1]	3	3
	Free Electives	3	6
		15 1/2	**12 1/2**
		Total credits:	**122**

Biology Electives
(2 required)[5]

BIO 321 General Microbiology
BIO 327 Molecular Biology
BIO 333, 334 General Genetics
BIO 411 Proseminar: Current Topics in Biology
BIO 419 Biological Scanning Electron Microscopy
BIO 421 Developmental Biology
BIO 460 Transmission Electron Microscopy

Chemistry Electives
(1 required)

CHM 318 Physical Chemistry Measurements I
CHM 319 Physical Chemistry Measurements II
CHM 421 Organic Mechanisms
CHM 422 Computer/Math Methods in Physical Science
CHM 431, 433 Inorganic Chemistry
CHM 442 Applied Spectroscopy
CHM 552 Instrumental Methods of Analysis
CHM 555 Methods of Chemical Separation

[1]The Humanities/Social Sciences requirement of 18 credits must consist of at least 6 credits of Humanities and 6 credits of Social Sciences. Note that there is no separate foreign language requirement for the BS degree. It is strongly recommended that the humanities requirement be satisfied by taking at least 1 and preferably 2 years of French, German or Russian. Literature requirement: 6 credits.

[2]Students with weak backgrounds in biology may need to take BIO 121, 122, 131, 132 before attempting subsequent biology courses.

[3]Students who have not definitely decided on the biochemistry option may instead take CHM 272 in order to retain the option of choosing the conventional chemistry option. If students remain in the Biochemistry Option, then CHM 272 would become a free elective.

[4]Students who do not contemplate doing undergraduate research (CHM 491-492) may postpone CHM 414 until their senior year.

[5]Other advanced biology or chemistry courses may be substituted with the prior written permission of the biochemistry advisor.

Chemistry Major
Premedical Option

This option offers distinct advantages in efficiency, versatility, and rigor in preparation for students interested in further studies in a medical, dental, optometric, podiatric, osteopathic, or veterinary school. Programs for pre-med students should have the approval of Dr. Alan Bates, co-chairperson of the Pre-medical Advisory Committee. Premedical chemistry majors are certified for graduation by the Chemistry Department, just as are conventional majors.

Separately, premedical advising is offered for students in any major at UMass Dartmouth (see program description elsewhere in this *Catalogue*).

A wide variety of majors is appropriate for those intending to attend medical or veterinary school, with appropriate advising.

Requirements

Semester Credits

		First	Second
First Year			
CHM 151, 152	Principles of Modern Chemistry	3	3
CHM 165, 166	Introduction to Experimentation	2	2
CHM 172	Introduction to Computer Applications for Chemists		1
MTH 111, 112	Analytical Geometry and Calculus I, II	4	4
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Humanities, Social Sciences, or Literature[1, 5]	3	3
		15	**16**
Second Year			
CHM 251, 252	Organic Chemistry I, II	3	3
CHM 265, 266	Organic Chemistry Lab I, II	2	2
CHM 272	Descriptive Inorganic Chemistry		4
MTH 211	Analytical Geometry and Calculus III	4	
PHY 113, 114	Classical Physics I, II	4	4
BIO 234	Biology of Cells[1]	3	
BIO 244	Biology of Cells Lab	1	
BIO	Biology Elective[2]		3 or 4
	Humanities, Social Sciences, or Literature		3
		17	**19 or 20**
Third Year			
CHM 305	Modern Methods of Chemical Analysis	3	
CHM 307	Procedures of Chemical Analysis	2	
CHM 315, 316	Physical Chemistry I, II	4	4
CHM 318	Physical Chemistry Measurements I		2
BIO 333	General Genetics	4	
	Science Elective[3]		3 or 4
	Humanities, Social Sciences, or Literature	3	6
		16	**15 or 16**
Fourth Year			
CHM 401, 402	Chemistry Seminar	1/2	1/2
CHM 411	Biochemistry I	3	
	Humanities, Social Sciences, or Literature	3	3
	Free Electives[4]	6	9
		12 1/2	**12 1/2**
		Total credits:	**123-125**

[1]Students with weak backgrounds in biology may need to take Biology of Organisms (BIO 121, 122, 131, 132) before attempting subsequent biology courses. Therefore, these two H/SS courses may need to be moved to another year or to a summer session.

[2]Appropriate biology electives are BIO 320 (Embryology) or BIO 370 (Animal Physiology).

[3]Appropriate electives would be CHM 422 (Computer and Mathematical Methods in Physical Science), CHM 442 (Applied Spectroscopy), CHM 552 (Instrumental Methods of Analysis), BIO 327 (Molecular Biology) or BIO 421 (Developmental Biology).

[4]Appropriate electives would be CHM 412 (Biochemistry II), CHM 431 (Principles of Inorganic Chemistry) or CHM 491-492 (Introduction to Research I, II).

[5]The Humanities/Social Sciences requirement of 18 credits must consist of at least 6 credits of Humanities and 6 credits of Social Sciences. Note that there is no separate foreign language requirement for the BS degree. Literature requirement: 6 credits.

Chemistry Major
BS-MS Option

This option offers advantages to capable students who are willing to devote their summers to furthering their education. For those going on to graduate work, it provides exposure to graduate courses and research, making the transition from BS to PhD level performance easier. For those going into teaching or industry, it yields a significant financial advantage.

Requirements

		Semester Credits	
First Year		**First**	**Second**
CHM 151, 152	Principles of Modern Chemistry	3	3
CHM 165, 166	Introduction to Experimentation	2	2
CHM 172	Introduction to Computer Applications for Chemists		1
MTH 111, 112	Analytical Geometry and Calculus I, II	4	4
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Humanities, Social Science or Literature	3	3
		15	**16**
Second Year			
CHM 251, 252	Organic Chemistry I, II	3	3
CHM 265, 266	Organic Chemistry Lab I, II	2	2
MTH 211	Analytical Geometry and Calculus III	4	
CHM 272	Descriptive Inorganic Chemistry		4
PHY 113, 114	Physics I, II	4	4
	Humanities, Social Science or Literature[1]	3	3
	Free Elective		3
		16	**19**
Third Year			
CHM 305	Modern Methods of Chemical Analysis	3	
CHM 307	Procedures of Chemical Analysis	2	
CHM 315, 316	Physical Chemistry I, II	4	4
CHM 318	Physical Chemistry Measurements I		2
CHM 422	Computer/Math Methods in Physical Science		3
CHM 402	Chemistry Seminar		1/2
	Humanities, Social Science or Literature	6	3
	Free Electives	3	3
CHM 492	Introduction to Research		3
		18	**18 1/2**
Summer 3	Research		
	Free Elective		3
			3
Fourth Year			
CHM 401	Chemistry Seminar	1/2	
CHM 319	Physical Chemistry Measurements II	2	
	Advanced Chemistry Electives	6	9
CHM 491	Introduction to Research	3	
	Humanities, Social Science or Literature	3	
	Free Elective	3	
		17 1/2	**9**
Summer 4	Research		
Fifth Year			
	Advanced Chemistry Electives	6	3
CHM 600	Thesis Research	6	6
		12	**9**
Summer 5	Research and completion of thesis		
		Total credits:	**153**

[1]Humanities/Social Sciences requirement of 18 credits must consist of at least 6 credits of Humanities and 6 credits of Social Sciences. Literature requirement: 6 credits.

[2]Should a student desire to lighten his/her course load in years three and four, Humanities/Social Sciences electives could be taken during Summer 2.

[3]The student should select the BS-MS option no later than the beginning of the fourth semester. Entrance into the program requires approval of the Chemistry Faculty. The student in the program may elect to terminate the program after the seventh semester with the completion of the BS requirements.

[4]Students who select the BS-MS program are eligible for teaching assistantships after completing the requirements for the BS degree (after the seventh semester) and for summer stipends during the fourth and fifth summers.

[5]At least 12 credits of the chemistry courses that count toward the MS degree must be at the 500 level.

[6]This program may be applied to the Biochemistry Option with appropriate modifications.

[7]Students in the BS-MS program must have and maintain a chemistry GPA of at least 3.00 and an overall GPA of 2.75.

Chemistry and Biochemistry Minors Requirements

Degree candidates who have a grade point average of at least 2.5 in the 100- and 200-level chemistry courses may request admission to the Chemistry or Biochemistry minors. This request must be approved by the Department Chairperson. A 2.0 grade point average in the courses listed will be required for completion of the minor.

Chemistry Minor

		Credits
CHM 151, 152	Principles of Modern Chemistry I & II	6
CHM 161, 162, 166 CHM 165, 166	Introduction to Applied Chemistry I & II and Introduction to Experimentation II **OR** Introduction to Experimentation I & II	4
CHM 251, 252	Organic Chemistry I & II	6
CHM 263, 264 CHM 265, 266	Bio-Organic Chemistry Laboratory I & II **OR** Organic Chemistry Laboratory I & II	2-4
CHM 305	Modern Methods of Chemical Analysis	3
CHM 307	Procedures of Chemical Analysis Laboratory	2
CHM 315 CHM 316	Physical Chemistry I **OR** Physical Chemistry II (by permission)	4
	Total	**27-29**

Biochemistry Minor

		Credits
CHM 151, 152	Principles of Modern Chemistry I & II	6
CHM 161, 162,166 CHM 165, 166	Introduction to Applied Chemistry I & II and Introduction to Experimentation II **OR** Introduction to Experimentation I & II	4
CHM 251, 252	Organic Chemistry I & II	6
CHM 263, 264 CHM 265, 266	Bio-Organic Chemistry Laboratory I & II **OR** Organic Chemistry Laboratory I & II	2-4
CHM 305 CHM 315	Modern Methods of Chemical Analysis **OR** Physical Chemistry I*	3 or 4
CHM 411, 412	Biochemistry I & II	6
	Total	**27-30**

* CHM 316, Physical Chemistry II, may be substituted for CHM 315, with permission.

Combined Chemistry Major-
Business Administration Minor

Requirements

This arrangement of courses is designed for the student who combines an interest in Chemistry with career goals in the business world. It is designed to enable the student to fulfill all requirements for the Chemistry Major and the Business Minor within the standard four-year curriculum. The student must be aware that deviations from the recommended course schedule will ensure that additional time in residence will be required. A comparable track is possible for the Biochemistry Option by substituting the appropriate courses.

		Semester Credits	
First Year		**First**	**Second**
CHM 151, 152	Principles of Modern Chemistry I, II	3	3
CHM 165, 166	Introduction to Experimentation	2	2
CHM 172	Introduction to Computer Applications for Chemists		
MTH 111, 112	Analytical Geometry and Calculus I, II	4	4
ENL 101, 102	Critical Writing and Reading I, II	3	3
ECO 231	Economics I		3
	Humanities, Social Sciences, or Literature Elective	3	
		15	**16**
Second Year			
CHM 251, 252	Organic Chemistry I, II	3	3
CHM 265, 266	Organic Chemistry Lab I, II	2	2
CHM 272	Descriptive Inorganic Chemistry		4
MTH 211	Analytical Geometry and Calculus III	4	
PHY 113, 114	Classical Physics I, II	4	4
ACT 211	Principles of Accounting I		3
	Humanities, Social Sciences, or Literature Elective	3	
		16	**16**
Third Year			
CHM 305	Modern Methods of Chemical Analysis	3	
CHM 307	Procedures of Chemical Analysis	2	
CHM 315, 316	Physical Chemistry I, II	4	4
CHM 318	Physical Chemistry Measurements I		2
CHM 422	Computer/Math Methods in Physical Science		3
MKT 211	Principles of Marketing	3	
MGT 311	Organizational Behavior		3
	Humanities, Social Sciences, or Literature Electives	3	3
		15	**15**
Fourth Year			
CHM 319	Physical Chemistry Measurements II	2	
CHM 401, 402	Chemistry Seminar	1/2	1/2
	Advanced Chemistry Electives	3	6
	Humanities, Social Sciences, Literature or Business Electives	9	9
		14 1/2	**15 1/2**
	Total credits:		**123**

Business Minor Requirements: ECO 231, ACT 211, MKT 211, and MGT 311 are required courses for the Business Minor. ECO 231 also satisfies one of the College of Arts and Sciences Social Sciences requirements. Three courses (9 credits) from among ACT 212, BIS 315, FIN 312, MGT 312, MGT 365, MGT 346, MGT 347 are required to complete the Business Minor. The University requirements for a minor specify that 9 credits must be at the 300-level or above. Note that BIS 315, FIN 312, and MGT 346 have additional prerequisites.

College of Arts and Sciences Requirements: Humanities/Social Science Requirements: 5 courses (besides ECO 231) which must include 2 humanities and one more social science course. Literature requirements: two courses.

General Education Requirements: Students should carefully plan their programs with their advisor to ensure that their courses selected for the Arts and Sciences requirements will also satisfy the appropriate General Education Requirements.

Gen Ed note: Chemistry courses satisfy the Natural Science and Technology requirement. Those marked **S** below are appropriate for non-science/engineering majors.

CHM 100 four administrative credits*
Preparation for College Chemistry
2 hours lecture, 1 hour recitation,
2 hours laboratory

Helps students overcome science, mathematics, and reasoning difficulties so that they may be successful in their required general chemistry course. The lecture and the laboratory are integrated to ensure that students have direct hands-on experience with most of the abstract ideas covered in the lecture.

CHM 101 three credits **S**
General Chemistry I
4 hours lecture and recitation

An introduction to the fundamental chemical laws and theories covering inorganic and organic chemistry with some descriptive chemistry. For non-science majors, nurses and technologists.

CHM 102 three credits **S**
General Chemistry II
4 hours lecture and recitation
Prerequisite: CHM 101

Continuation of CHM 101.

CHM 103 one credit **S**
General Chemistry Laboratory I
2 hours laboratory
Corequisite: CHM 101

An introduction to chemical laboratory techniques and methods including measurements and demonstrations of chemical principles.

CHM 104 one credit **S**
General Chemistry Laboratory II
2 hours laboratory
Prerequisites: CHM 101, 103
Corequisite: CHM 102

Continuation of CHM 103.

CHM 130 three credits **S**
Chemistry and the Environment
3 hours lecture

Available to anyone in the university, this course provides substantial treatment, with demonstrations, of the chemistry involved in consumer concerns (food additives, medicines, detergents, etc.), air and water pollution, elementary biochemistry, and the general question of power generation and utilization (fuel cells, solar energy conversion, nuclear energy, etc.). No knowledge of chemistry is assumed, but it is hoped the student will have had high school chemistry or its equivalent.

CHM 131 three credits **S**
Environmental Issues from a Chemical Perspective
3 hours lecture

Examines some of the major environmental problems facing society and the knowledge of chemistry needed to comprehend the problem and evaluate possible solutions. The course is available to anyone in the university. It will cover issues associated with chemical industry such as hazardous waste management and pesticide use as well as the risks and benefits of living in a chemical world.

CHM 132 three credits **S**
Chemistry in Nutrition and Health
3 hours lecture

Nutrition and health issues facing people today and the chemistry needed to understand them. Topics to be discussed include health efforts of toxic substances, the science of proper diet, and some of the biochemistry needed to understand diseases such as cancer and AIDS.

CHM 151 three credits
Principles of Modern Chemistry I
4 hours lecture and recitation
Prerequisites: High school chemistry and algebra

Physical and chemical principles pertaining to the structure of chemical species and the nature, extent, and rates of chemical reactions. The details of stoichiometry, energy changes associated with chemical reactions, atomic and molecular structure, chemical bonding, and the phenomenon of chemical periodicity are emphasized and discussed in light of modern scientific theories. For science and engineering majors. Honors sections are offered.

CHM 152 three credits
Principles of Modern Chemistry II
4 hours lecture and recitation
Prerequisite: CHM 151

A continuation of CHM 151. The details of the behavior of solids, liquids, & gases, the types of intermolecular forces, colligative properties, gaseous equilibrium, aqueous equilibrium, thermodynamics, electrochemistry, kinetics, and nuclear chemistry are emphasized and discussed in light of modern scientific theories. For science and engineering majors. Honors sections are offered.

CHM 152 three credits
Principles of Modern Chemistry II
4 hours lecture and recitation
Prerequisite: CHM 151

A continuation of CHM 151. The details of the behavior of solids, liquids, & gases, the types of intermolecular forces, colligative properties, gaseous equilibrium, aqueous equilibrium, thermodynamics, electrochemistry, kinetics, and nuclear chemistry are emphasized and discussed in light of modern scientific theories. For science and engineering majors. Honors sections are offered.

CHM 153 three credits
Modern and Applied Chemistry for Science and Engineering I
Combined lecture/laboratory format

Content of courses 151, 161 in a combined lecture/laboratory format. (Course subject to final curriculum approvals.)

CHM 154 three credits
Modern and Applied Chemistry for Science and Engineering II
Combined lecture/laboratory format

Content of courses 152, 162 in a combined lecture/laboratory format. (Course subject to final curriculum approvals.)

CHM 162 one credit
Introduction to Applied Chemistry II
1 hour lecture, 2 hours laboratory
Prerequisites: CHM 151, 161
Corequisite: CHM 152

A continuation of CHM 161 with emphasis on molecular weight determination techniques, colligative properties, qualitative analysis, acid-base chemistry, properties of buffer solutions, chromatographic techniques, kinetics, solubility constant determination, and electrochemistry. Most experiments involve the identification of unknowns and statistical analysis of data. The experiments in CHM 162 parallel the topics covered in CHM 152. A written laboratory report summarizing the procedure and results for each experiment is

* Administrative credits do not count towards the total required for graduation.

required. For science and engineering majors. Honors sections are offered.

CHM 165 two credits
Introduction to Experimentation I
2 hours lecture, 4 hours laboratory
Pre- or Corequisite: CHM 151

Laboratory for chemistry and textile chemistry majors. An introduction to the basic techniques, methods and theory of chemical experimentation, and the recording, analysis, interpretation and reporting of experimental results, based on qualitative and quantitative chemical procedures. Skills of professional quality, needed to use apparatus for the accurate measurement of mass, volume, color intensity, etc., will be developed.

CHM 166 two credits
Introduction to Experimentation II
2 hours lecture, 4 hours laboratory
Prerequisite: CHM 165
Pre- or Corequisite: CHM 152

Continuation of CHM 165.

CHM 167 one credit
Introduction to Statistics for the Chemistry Lab
2 hours lecture and recitation

Statistics at an introductory level as applied to experiments in a college freshman level chemistry laboratory. Topics covered include the nature of distributions of data, histograms, basic statistical calculations, the normal distribution, t-distributions, statistical tests appropriate for small samples of data criteria for rejection of data, analysis of data and reporting of result and an introduction to propagation of errors. Credit cannot be received for both CHM 165 and CHM 167.

CHM 172 one credit
Introduction to Computer Applications for Chemists
1 hour lecture, 1 hour recitation
Prerequisites: CHM 151, 165
Corequisites: CHM 152, 166

Approaches to chemistry problem-solving using microcomputers. Spreadsheets and other commonly-available applications will be used to study mathematical concepts related to chemistry, to solve problems on topics from the chemistry majors' lecture and lab courses, and to analyze data obtained in the lab. Students also will be taught to search for chemical information on the World Wide Web.

CHM 251 three credits
Organic Chemistry I
4 hours lecture and recitation
Prerequisite: CHM 152

A survey of the chemistry of carbon compounds and introduction to the basic principles of organic chemistry.

CHM 252 three credits
Organic Chemistry II
4 hours lecture and recitation
Prerequisite: CHM 251

Continuation of CHM 251.

CHM 263 one credit
Bio-organic Chemistry Laboratory I
1 hour lecture, 3 hours laboratory
Prerequisites: CHM 152, 162
Corequisite: CHM 251

The synthesis of organic compounds and an introduction to the organic methods of separation, purification and identification. This course is coordinated with CHM 251 and is designed for biology and medical laboratory science majors.

CHM 264 one credit
Bio-organic Chemistry Laboratory II
1 hour lecture, 3 hours laboratory
Prerequisites CHM 251, 263
Corequisite: CHM 252

Continuation of CHM 263.

CHM 265 two credits
Organic Chemistry Laboratory I
1 hour lecture, 3 hours laboratory
Prerequisites: CHM 152, 166; or CHM 162

The synthesis of organic compounds and an introduction to the organic methods of separation, purification and identification. This course is coordinated with CHM 251 and is designed for chemistry and textile chemistry majors.

CHM 266 two credits
Organic Chemistry Laboratory II
1 hour lecture, 3 hours laboratory
Prerequisites: CHM 251, 265
Corequisite: CHM 252

Continuation of CHM 265.

CHM 272 four credits
Descriptive Inorganic Chemistry
2 hours lecture, 3 hours laboratory
Prerequisites: CHM 152, 166

A survey of the preparations and reactions of selected representative elements and transition metals. For each element the following points are treated: physical and chemical properties of the element; occurrence of the element in nature, its extraction and uses; important compounds and their uses, including industrial processes. An introduction to transition metal complexes. An advanced treatment of ionic equilibria including precipitation and complex-formation reactions.

CHM 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

CHM 305 three credits
Modern Methods of Chemical Analysis
3 hours lecture
Prerequisites: CHM 252, 266, 166; recommended: CHM 272

Introduction to chemical and instrumental analytical techniques. The theory of neutralization reactions in aqueous and nonaqueous systems. Oxidation-reduction and complex formation equilibria. Basic theory of electronic circuitry. Introduction to electrochemical methods. Introduction to chromatographic and spectrophotometric techniques.

CHM 307 two credits
Procedures of Chemical Analysis
1 hour lecture, 4 hours laboratory
Corequisite: CHM 305

Laboratory experimentation designed to develop the techniques and illustrate applications of analytical procedures to the solution of chemical problems.

CHM 315 four credits
Physical Chemistry I
4 hours lecture, 1 hour recitation
Prerequisites: CHM 152, MTH 211, two semesters of college physics

An introduction to the theoretical principles underlying chemical phenomena; applica-

Gen Ed note: Chemistry courses satisfy the Natural Science and Technology requirement. Those marked **S** below are appropriate for non-science/engineering majors.

tions of thermodynamics to chemical phenomena.

CHM 316 four credits
Physical Chemistry II
4 hours lecture, 1 hour recitation
Prerequisite: CHM 315

An introduction to quantum mechanics, symmetry, spectroscopy, chemical kinetics and transport processes.

CHM 318 two credits
Physical Chemical Measurements I
1 hour lecture, 4 hours laboratory
Prerequisites: CHM 305, 307, 315
Corequisite: CHM 316

Experiments in physical chemistry designed to test established theoretical principles which have been introduced in CHM 315 and 316. The experiments provide the student with basic experience in obtaining precise physical measurements of chemical interest.

CHM 319 two credits
Physical Chemical Measurements II
1 hour lecture, 4 hours laboratory
Prerequisites: CHM 305, 307, 316

Continuation of CHM 318.

CHM 350 three credits
Chemical Oceanography
Prerequisites: CHM 151, 152

Chemical oceanography, with an overview of the interaction between marine chemistry and oceanic physics, biology, and geology. The fundamental processes controlling the distribution of chemical species in the ocean will be explored and implications for global environmental change highlighted.

CHM 352 three credits
Organic Preparations
1 hour lecture, 4 hours laboratory
Prerequisites: CHM 252, 266

A study of the more intricate synthetic procedures of organic chemistry including use of the literature for choice of optimum methods.

CHM 362 three credits
Introduction to Biochemistry
3 hours lecture
Prerequisite: CHM 252
Students may not receive credit for both CHM 362 and CHM 411, 412.

An introduction to the chemical properties of compounds of biological interest; bio-energetics and enzymology. A survey of the metabolism of proteins, carbohydrates, lipids, nucleic acids and other bio-substances.

CHM 370 three credits
Introduction to Chemical Engineering
3 hours lecture
Prerequisites: CHM 152, 315, or EGR 232

An introduction to the principles of chemical processes, with a special emphasis on material and energy balances. Departmental elective for majors in chemistry and mechanical engineering.

CHM 401 one-half credit
Chemistry Seminar I
1 hour lecture

Lectures on current topics in chemistry from guest lecturers and students. Majors must enroll for two semesters out of four in the junior and senior years.

CHM 402 one-half credit
Chemistry Seminar II
1 hour lecture

Continuation of CHM 401.

CHM 411 three credits
Biochemistry I
3 hours lecture
Prerequisite: CHM 252, recommended BIO 234
Students may not receive credit for both CHM 362 and CHM 411, 412

See description under CHM 511.

CHM 412 three credits
Biochemistry II
Prerequisite: CHM 411

See description under CHM 512.

CHM 414 three credits
Biochemistry Laboratory
1 hour lecture, 6 hours laboratory
Prerequisite: CHM 264 or 266; CHM 411
Pre- or Corequisite: CHM 412
Recommended: CHM 305, 307; BIO 234, 244

Basic biochemical techniques and methods including spectrophotometry, electrophoresis, chromatography, ultracentrifugation and radioisotopic techniques and their application to amino acids and proteins, lipids and membranes, enzymes and nucleic acids.

CHM 421 three credits
Organic Mechanisms
Pre- or Corequisite: CHM 315

See description under CHM 521.

CHM 422 three credits
Computer and Mathematical Methods in Physical Science
Prerequisite: CHM 172, 315
Recommended corequisite: CHM 316

See description under CHM 522.

CHM 426 three credits
Polymer Synthesis and Characterization
2 hours lecture, 4 hours laboratory
Prerequisites: CHM 252, 315; recommended, TEC 410

See description under CHM 526.

CHM 431 three credits
Principles of Inorganic Chemistry
3 hours lecture
Prerequisite: CHM 316

The application of physical chemical principles to inorganic systems. Discussions of the chemistry of the representative elements utilizing thermodynamic principles and the modern theories of bonding and structure. Introduction to coordination chemistry.

CHM 432 three credits
Organic Analysis
2 hours lecture, 4 hours laboratory
Prerequisites: CHM 252, 266

Quantitative elemental and group determination on a microscale followed by a study of the systematic identification or organic compounds. Extensive laboratory work on unknowns is required.

Note: Some graduate courses may be open to undergraduates. Please consult your department chairperson. See the *Graduate Catalogue* for gradaute general and program requirements.

Graduate Courses in Chemistray and Biochemistry

CHM 433 one credit
Inorganic Chemistry Laboratory
1 hour lecture, 4 hours lab. (bi-weekly)
Prerequisite: CHM 316
Corequisite: CHM 431

Synthetic and instrumental techniques currently used by inorganic chemists, including electrolytic, inert atmosphere, tube furnace and organometallic syntheses; ultraviolet-visible, nuclear magnetic resonance, infrared and mass spectrometry, magnetic susceptibility determination, as applied to a range of inorganic materials. This course is required for American Chemical Society certification and complements CHM 431.

CHM 442 three credits
Applied Spectroscopy
3 hours lecture
Prerequisites: CHM 252, 266, 315

See description under CHM 544.

CHM 449 three credits
Theory and Applications of One- and Two-Dimensional FT-NMR
Prerequisites: CHM 251/252 and CHM 315

See description under CHM 549.

CHM 491 three to six credits
Introduction to Research I
9 to 18 hours laboratory
Prerequisite: Departmental permission

Chemistry majors who are doing well in formal course work and who have indicated research potential are encouraged to undertake an original investigation under the direction of a member of the chemistry faculty.

CHM 492 three to six credits
Introduction to Research II
9 to 18 hours laboratory

Continuation of CHM 491.

CHM 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Terms and hours to be arranged.

CHM 196, 296, 396, 496 variable credit
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Terms and hours to be arranged.

CHM 510 three credits
Advanced Organic Chemistry
Prerequisites: One year of physical chemistry and CHM 521

A study of mechanisms and stereo-chemical aspects of chemical reactions including considerations of chemical kinetics and reactivity in terms of modern bonding theory and structural concepts.

CHM 511 three credits
Biochemistry I
Prerequisite: One year of organic chemistry; recommended, cell biology or equivalent

A comprehensive study of biochemistry including amino acid and protein chemistry, enzymology, enzyme kinetics, bioenergetics, metabolism of carbohydrates, lipids, amino acids, nucleotides; biosynthesis of nucleic acids and proteins.

CHM 512 three credits
Biochemistry II
Prerequisite: CHM 511

A continuation of CHM 511.

CHM 520 three credits
Advanced Inorganic Chemistry
Prerequisites: CHM 317, 431

An advanced treatment of the structure and reactivity of inorganic materials. Major emphasis is on molecular orbital theory, the ligand field theory of transition metal complexes, and the kinetics and mechanisms of inorganic reactions.

CHM 521 three credits
Organic Mechanisms
Prerequisite: CHM 252. Prerequisite or Corequisite: One semester of physical chemistry

The first part of the course provides a background in the various areas of physical organic chemistry such as thermodynamics, kinetics, acid-base theory, structure-reactivity relationships and dipole moments. This is followed by a systematic study of reaction mechanisms.

CHM 522 three credits
Computer and Mathematical Methods in Physical Science
Prerequisite: One semester physical chemistry; three semesters calculus; working knowledge of spreadsheets; permission of instructor.
Recommended Pre- or Co-requisite: CHM 316

Mathematical techniques in physical science using computers. Includes matrices, linear algebra, introduction to differential equations, curve-fitting, iterative solutions, numerical methods of integration and solution of differential equations, eigenvalue-eigenvector problems, molecular orbital calculations, trajectory calculations, spectrum simulation.

CHM 523 three credits
Thermodynamics
Prerequisite: One year of physical chemistry

Development of the general thermodynamic theory from the first and second laws and application to homogeneous and heterogeneous reaction systems.

CHM 525 three credits
Theoretical Organic Chemistry
Pre- or Co-requisites: One year each of organic and physical chemistry

Molecular orbital theory of organic molecules; applications of molecular orbital theory; reactivity, ESR, Carbon-13 NMR, photoelectron spectroscopy, etc.; orbital symmetry in electrocyclic reactions, cycloadditions, and sigmatropic reactions.

CHM 526 four credits
Polymer Synthesis and Characterization
Prerequisites: CHM 252, 315, TEC 410

Laboratory synthesis of polymers and copolymers by different methods with an emphasis on the practical aspects of polymer synthesis. A discussion of various techniques of polymer characterization in terms of basic principles, experimental procedure, and interpretation of results. A selected number of experiments will be conducted on a class-project basis.

CHM 527 three credits
Electronic Structure of Atoms and Molecules
Prerequisite: One year of physical chemistry

Fundamental quantum mechanical principles of electronic structure. Angular momentum, the hydrogen atom problem, helium ground and excited states, electron spin and antisymmetrization, many electron atoms, bonding theory, valence bond and molecular orbital theory of diatomic and polyatomic molecules, applications of group theory to molecular orbital calculations, the self-consistent field method.

CHM 529 three credits
Physical Biochemistry
Prerequisite: One year each of physical chemistry and biochemistry

Application of physico-chemical principles to biochemistry. Discussion of the theoretical basis of such biochemical techniques as ultracentrifugation, electrophoresis and chromatography and their application. Application of modern spectroscopic methods to biochemistry.

CHM 531 three credits
Chemical Kinetics
Prerequisite: One year of physical chemistry

Principles and selected topics, including analysis of reaction rates, kinetic and transition state theories, reactions in gas and liquid phases, unimolecular reactions, fast reactions, enzyme kinetics and polymer kinetics.

CHM 533 three credits
Statistical Methods
Prerequisite: One year of physical chemistry

Introduction to the principles and methods of statistical mechanics. Classical and quantum partition functions applied to the calculation of thermodynamic properties.

CHM 542 three credits
Quantum Chemistry
Prerequisite: One year of physical chemistry

Fundamental concepts of quantum mechanics; wave properties, Schrodinger equation, operators. Basic application to free particles, harmonic oscillator, hydrogen atom. Perturbation theory and variation method. Applications to many-electron systems and time-dependent problems.

CHM 544 three credits
Applied Spectroscopy
Prerequisites: One year each of organic and physical chemistry

A study of spectroscopic methods of determination of structure of organic compounds, especially infrared, ultraviolet, visible, nuclear magnetic resonance, and mass spectrometry, with extensive applications to individual cases.

CHM 549 three credits
Theory and Applications of One- and Two-Dimensional FT-NMR
Prerequisites: CHM 251/252 and CHM 315

Fundamentals of Fourier Transform Nuclear Magnetic Resonance (FT-NMR) spectroscopy, including one- and two-dimensional techniques discussed from the perspective of structural determination. Generation of NMR signals and parameter optimization using a 300 MHzFT-NMR spectrometer will complement the analysis of NMR signals generated in situ.

CHM 550 three credits
Special Topics in Chemistry
Prerequisite: Permission of instructor

An advanced treatment of special topics in chemistry with an emphasis on recent developments. The subject matter may vary from year to year. Course may be repeated with change of content.

CHM 551 three credits
Electroanalytical Chemistry
Prerequisite: One year of physical chemistry

The development of the fundamental mathematical relationships upon which electrochemical methods are based. The interpretation of the kinetics of electrode reactions and the transfer of material to and from electrodes under various conditions. The interpretation of data of direct analytical significance generated by the methods and techniques of modern electrochemistry.

CHM 552 three credits
Instrumental Methods of Analysis
Prerequisites: Permission of instructor

The theory and practice of modern analysis utilizing optical and electrochemical instrumentation in the solution of chemical problems. Topics discussed include ultraviolet, visible, and infrared spectrophotometry, fluorimetry, flame emission and

atomic absorption spectroscopy, plasma emission spectroscopy, potentiometry utilizing ion specific electrodes, radiochemistry, thermoanalytical methods, voltammetry including polarography, amperometry, and coulometry; liquid chromatography, electron spectroscopy, x-ray fluorescence analysis, and neutron activation analysis.

CHM S53 three credits
Nuclear and Radiochemistry
Prerequisite: One year of physical chemistry

Discussion of the theory and application of the decaying nucleus. Topics include natural and artificial radioactivity; preparation and decay properties of radioactive nuclides; interaction of radiation and matter; nuclear models; nuclear fusion; applications to chemistry.

CHM S54 three credits
Molecular Spectra and Molecular Structure
Prerequisite: One year of physical chemistry

Basic principles of molecular spectroscopy, rotational, vibrational, and electronic spectral transition moments and selection rules. Use of spectra to find dissociation energies, force constants, inter-atomic distances, molecular symmetry and related quantities. Applications to real molecules in conjunction with other techniques for study of molecular structure.

CHM S55 three credits
Methods of Chemical Separation
Prerequisites: Analytical and physical chemistry

A survey of modern separation methods. Topics include liquid, gas, thin layer and ion exchange chromatography; electrophoresis; sample preparation and extraction.

CHM S56 three credits
Magnetic Resonance Spectroscopy
Prerequisite: One year of physical chemistry

Introduction to the theory of electron paramagnetic resonance and nuclear magnetic resonance; applications in the study of molecular structure.

CHM S60 three credits
New Synthetic Methods
Prerequisite: One year of organic chemistry

Survey of preparative methods in organic chemistry and their application to the synthesis of complex molecules.

CHM S62 three credits
Natural Products
Prerequisite: One year of organic chemistry

Isolation, structure elucidation, total synthesis, biogenesis, metabolism, and physiological importance of natural products.

CHM S9S variable credit
Independent Study
Prerequisites: Upper-division standing, permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

CHM S96 three credits
Directed Study
Prerequisites: Permission of the instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged

CHM 600 three to nine credits
Thesis Research
Prerequisite: Departmental permission

Original chemical research and preparation of thesis. Required for Plan A master's degree. Graded P/F.

CHM 610 two to five credits
Project Research
Prerequisite: Departmental permission

Original chemical research, required for Plan B master's degree. Written project report required. Graded P/F.

CHM 620 two to five credits
Library Research
Prerequisite: Departmental permission

Survey of a particular topic in the chemical literature. Written final summary report required. Graded P/F.

CHM 6S0 one credit
Graduate Seminar

Lectures on current topics in chemistry from guest lecturers and students. The graduate student will present a total of two seminars one of which will be the thesis seminar Each graduate student is required to enroll in this course for each semester in residence This course will not count toward the 30 credits of course work and research required for the degree

Economics

A major in Economics provides students with a unique blend of the perspective gained from a liberal arts education and the practical skills necessary for intelligent decision-making and administration in business and government. In addition to providing a sound theoretical foundation in economic theory and economic statistics, the economics major introduces students to a variety of applied fields which focus on international, national, and regional economic problems, issues, and policies. Class sizes in major courses are relatively small, and there is much opportunity for direct contact and interaction with faculty.

Economics is the science of decision-making. Students of economics learn to identify and analyze the costs and benefits of financial and social decisions. Skills in cost-benefit analysis, the core of economists' training, are widely applicable and highly valued in current job markets.

Graduates of the economics program are prepared for and have been employed in finance, insurance, real estate (for example as real estate appraisers, stock brokers, credit analysts, loan officers, research analysts); management positions in business; economic journalism; high school teaching, public policy and government employment (federal, state, local).

Opportunities for further education include law school (J.D. Degree); graduate business school (M.B.A. degree); M.S. degrees in accounting, business, or finance; master's degree in public policy; master's degree and Ph.D. in economics.

Faculty and Fields of Interest

David E. Berger labor economics, regional economics

Lewis Dars micro- and macroeconomics, econometrics

Frances F. Esposito industrial organization and antitrust policy, micro theory, econometrics

Daniel L. Georgianna comparative economic systems, resource economics, history of economic thought

William Hogan (chairperson) economic statistics & econometrics, macroeconomics, demography

John Ohly international economics, monetary economics

Ronald Shadbegian public economics, state and local public finance, environmental economics, microeconomics, econometrics

Sonia Walgreen economics of aging, economic development, urban economics

Economics Major
BA Degree

Students who wish to pursue a professional career in economics should plan to attend graduate school. For admission to graduate programs in Economics students should follow the curriculum of the honors major in economics and should discuss their plans with faculty advisors.

Requirements

		Credits
ECO 100	One 100-level course*	3
Introductory level major requirements		
ECO 231, 232	Principles of Micro, Macro	6
Core major requirements		
ECO 301, 311	Intermediate Micro, Macro	6
ECO 332	Economic Statistics	3
Upper-level electives		
ECO	12 credits of 300- or 400-level courses	12
Research course requirements		
ECO	Two 400-level courses**	6
	Total	**36**

Beginning with the class of 2002, students in all majors are subject to General Education requirements. For students how plan to graduate in 2002 or later, there is a General Education requirement for Computer and Information Literacy, Tier II. For Economics majors, this requirement consists of passing ECO 200, Computing and Information Technology Applications (3 credits), which will be offered for the first time in academic year 1999-2000. For students in this category, the total number of upper-level electives (possibly including a 100-level course) is reduced to 12; the total number of required credits remains at 36.

Students who will graduate in the class of 2001 or earlier are not subject to General Education requirements but must complete two semesters of math. (For students who will graduate in the class of 2002 or later, the General Education Math requirement replaces the departmental requirement.) Most students take MTH 101 and 102 but may substitute other courses for these two. Please see the Department Chair to discuss this or if you have any questions.

* Majors are encouraged to take a 100-level Economics course during their freshman or sophomore years. However, Economics majors may not take any 100-level Economics course for credit toward the major after completing any 300- or 400-level Economics course. In this case, an additional 300-level or 400-level course is required, for a total of 15 credits at the 300- or 400-level. In either case, a total of 36 credits is required in Economics courses.

** Research courses require a major research paper. All 400-level courses in Economics require a major research paper. Under some circumstances, students may be allowed to use a 300-level course toward this requirement if the course includes a requirement of a major research paper. Please see the Department Chair if you have questions.

Additional requirements

Students must achieve a minimum cumulative grade point average of 2.000 courses required for the Economics major.

In addition, Economics majors are required to take two semesters of mathematics. Most students choose to take MTH 101 and MTH 102. Students may substitute certain other mathematics courses for these two. Please see your advisor or the department chairperson for more information.

Honors Major in Economics

Honors Major requirements are the same as specified for the regular Economics major, except that

ECO 333, Econometrics, and ECO 498, Honors Thesis, must be included as 6 of the credits among the Upper-level electives;

and

Students must achieve a minimum cumulative grade point average of 3.200 in courses required for the Economics Honors major.

Economics Minor

A minor in economics may be elected by a student majoring in any other field. Any degree candidate who has between 54 and 84 credits, with a cumulative grade point average of 2.0 and with a 2.5 grade point average in his or her major, may request admission to the minor. Before being admitted to the economics minor, student must obtain approval of the Economics Department chairperson.

Eighteen credit hours are required and must include the following courses:
ECO 231, 232, and either 301 or 311 (9 credits). The remaining 9 credits must be selected from courses in economics numbered ECO 300 or higher. Independent study, directed study, or experiential learning may not be applied toward the minor. Students must have, at the time of graduation, an average of at least 2.5 in all courses taken in economics to qualify for the minor.

ECO 101 three credits **E, G**
Contemporary Issues in Economics

Basic economics concepts are used to analyze issues of social responsibility at global and domestic levels. Topics such as national health, aging and care of the elderly, economics of professional sports, pollution, governmental control of prices, inflation unemployment, the national debt, and economic growth are covered.

ECO 103 three credits **D, E, O**
Cities, Minorities, and Poverty

Review and analysis of major social problems faced by cities; emphasis on origin, causes and possible solutions for poverty and minority problems.

ECO 105 three credits
Economic Development

The meaning of economic development. The interaction of economic, social and cultural forces in development. Widely different time periods will be considered.

ECO 107 three credits
Economics of Pollution

Basic economic analysis of pollution control. A growing concern of policy-makers is how to achieve both economic growth and a cleaner environment. We will examine issues like how the EPA sets ambient air quality standards and how we can achieve those standards in the cost-effective way.

Gen Ed Key

E	Ethics and Social Responsibility
G	Global Awareness
D	Diversity
I	Information and Computer Literacy, Advanced Course
W	Writing-Intensive Course
O	Oral Skills

ECO 111 three credits **D, E, O**
Jobs and Discrimination

Basic analysis of problems of economic growth, job creation, and unemployment; structure of work and jobs will be explored, along with current issues surrounding the government's impact on inflation, taxation, and economic planning.

ECO 200 three credits **I, O**
Computing and Information Technology Applications
Prerequisites: 3 credits in ECO and ENL 101 & 102, or permission of instructor

Introduction to computing and information technology for economics majors. Students carry out à semester-long research project and use computing and information technology for searches, data analysis, and communication of results.

ECO 231 three credits **E, G**
Principles of Microeconomics
Prerequisite: none

Survey of the American economy focusing on markets, the price system, and resource allocation. Price determination in competitive and imperfectly-competitive markets. Applications in agricultural economics, legal prices, excise taxes, labor market issues, advertising, technological change, pollution and the environment, public goods, antitrust policy, international trade, and alternative economic systems.

ECO 232 three credits **E, G**
Principles of Macroeconomics
Prerequisites: None. This course may be taken before ECO 231.

Survey of introductory macroeconomics with focus on economic growth, unemployment, and inflation. Topics covered include national income accounting, inflation, unemployment, fiscal policy, money, the banking system, and monetary policy are covered. Balance of payments and currency exchange rate issues are analyzed.

ECO 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.) In this department, students may receive credit only for experiences in which they do not receive pay for the same work.

ECO 301 three credits
Intermediate Microeconomics
Prerequisites: ECO 231, 232; or permission of instructor

Contemporary intermediate treatment of microeconomic theory, applications, and price policy. Covers the theory of price determination, resource allocation, income distribution, and welfare economics. Perfectly competitive markets and models of imperfect competition are covered. Theory is integrated with public policy questions.

ECO 311 three credits
Intermediate Macroeconomics
Prerequisites: ECO 231, 232; or permission of instructor

A one-semester course in contemporary intermediate macro theory. Covers issues in economic growth, unemployment, and inflation. Develops and contrasts the New Classical (equilibrium) and Neo-Keynesian (disequilibrium) models in the aggregate demand/aggregate supply framework for both closed and open economies. Policy implications of each model are discussed. Introduces students to sources of macroeconomic data.

ECO 321 three credits
Comparative Economic Systems
Prerequisites: ECO 231, 232

Comparisons in terms of structure and performance between capitalist economies, centrally-planned socialist economies, decentralized or market socialist economies, and mixed economies. The case study method is used, concentrating on four to six countries. Major emphasis is on the economy of the USSR.

ECO 331 three credits
Economics of Developing Countries
Prerequisites: ECO 231, 232

A study of economic development in Third World nations. Emphasis is on the analysis of critical development problems from a combined theoretical, empirical, and policy-

oriented perspective. The course will also explore the historical, political, social, and economic roots of underdevelopment and the future of the world economy in an age of increasing interdependence.

ECO 332 three credits
Economic Statistics
Prerequisites: ECO 231, 232, and 3 credits of MTH; or permission of instructor

Introduction to data and statistical methods used in economics. Descriptive statistics, probability distributions, sampling, estimation, confidence intervals, hypothesis testing, correlation, and regression including multiple regression are covered. Applications in economics with current economic data are emphasized.

ECO 333 three credits
Econometrics
Prerequisite: ECO 332; or permission of instructor

Introduction to econometrics including development of basic techniques of bivariate and multivariate linear regression analysis; use of lagged variable and dummy variables in model building; problems of multicollinearity, autocorrelation and heteroscedasticity.

ECO 335 three credits
Resource Economics
Prerequisites: ECO 231, 232; or permission of instructor

The economics of renewable and non-renewable, common and private resources. The focus of this course will be comparison between markets and planning in the use of resources; the international distribution and use of resources will also be covered.

ECO 337 three credits
Environmental Economics
Prerequisite: ECO 231

This course will study the fascinating and growing field of environmental and natural resource economics. All the topics covered (e.g., property rights and externalities, regulation and pollution control) will be examined as part of the general focus on the problem of economic growth in the presence of limited environmental and natural resources. We will employ the tools from 'basic' microeconomic theory to study the relationship between the economy and the natural environment.

ECO 342 three credits
Labor Economics
Prerequisites: ECO 231, 232; or permission of instructor

The labor force. Wages in competitive and non-competitive markets. Wage structures. Inequalities and discrimination. Impacts of unions and social standards. Indexation, inflation and unemployment.

ECO 343 three credits **E, G**
The Economics of Sex and Race Discrimination
Prerequisites: ECO 231, 232; or permission of instructor

The theory of labor markets and the problem of discrimination. Current problems facing women and minorities will be examined. Existing programs and trends will be explored.

ECO 344 three credits
Work, Jobs, and Income
Prerequisites: ECO 231, 232; or permission of instructor

Study of changes in the labor force, the impact of labor market processes and how they effect work motivation, job performance and income distribution. Formerly ECO 453, and may not be repeated under this new number.

ECO 355 three credits
Antitrust Law and Economics
Prerequisite: ECO 231

The main antitrust laws and the rich variety of court decisions that have influenced decades of economic activity. The arguments of the plaintiffs and prosecution are discussed and evaluated as well as the majority and minority opinions of the Court. Economic analysis is employed to view the economic motives of the firms involved. Students learn about monopolization cases from the famous ALCOA case (1945) to the 1982 AT&T case. Precedent-setting cases involving "price fixing," exchange of price information, exclusive dealing, tying contracts, price discrimination and mergers are analyzed.

ECO 362 three credits
Monetary Theory and Policy
Prerequisites: ECO 231, 232

Structure of the American monetary and banking system. Monetary theory is developed and monetary policies are considered.

ECO 366 three credits
Economics of Aging
Prerequisites: ECO 231, 232; or permission of instructor

Economic issues associated with "growing older" as well as issues and policies related to "being older"; including the economic status of the elderly, economic implications of paid work or retirement, the economic impact of social security, health care needs, and costs.

ECO 371 three credits
International Trade
Prerequisites: ECO 231, 232

Examination of international trade theory and policy. The course develops the theoretical framework for analyzing the potential gains from, direction of, and distributional effects of international trade as well as the potential impacts of tariffs and other policies affecting trade. Among other topics, the course will examine free trade versus protectionism, governmental promotion of competitiveness and the growing importance of trading blocs.

ECO 372 three credits
International Finance
Prerequisites: ECO 231, 232

Examination of international monetary theory and policy. The course develops the basic analytical tools for analyzing monetary relations among nations. The causes and effects of foreign exchange rate changes are explored. Macroeconomic interdependence among nations and its implications for policy are examined. The pros and cons of alternative international monetary systems are compared.

ECO 401 three credits
Industrial Organization and Antitrust Policy
Prerequisite: ECO 301; or permission of instructor

Development of antitrust policy in the U.S. Discussion of tying arrangements, vertical integration, price discrimination, market

structure and technological innovation, diversification, mergers, and patents. Theoretical and empirical discussion of barriers to new competition in American industries.

ECO 402 three credits
Economics of Regulation
Prerequisite: ECO 231

The impact of state and federal government economic and social regulation on industrial economics. Topics include economic regulation of the financial sector and natural monopoly situations (electric power, natural gas, and local telephone service); common resource problems—broadcasting; social regulation of health, safety, and the environment; and deregulation of transportation industries.

ECO 416 three credits
History of Economic Thought
Prerequisites: ECO 231, 232

The development of economic thought with emphasis on the period beginning with Adam Smith and ending with J.M. Keynes. Methodological issues in economics are also considered, and questions concerning the current status and the future directions of the profession are addressed.

ECO 417 three credits **E, O, W**
Economics and Population Analysis
Prerequisites: ECO 231, 232; or permission of instructor

The measurement and behavior of the major demographic variables, fertility, mortality, and migration, and their role in determining the growth and age distributions of populations. Applications include historical demography, the relation of population growth to economic development, urban concentration and crowding, environmental deterioration, the aging of populations, and zero population growth. Population policy and prospects for both the near future and the longer run are also considered. Upperclass elective. Prerequisites: ECO 231, 232 or consent of instructor. This is a multidisciplinary course, and students at the junior or senior level in majors other than economics are encouraged to consider the course even though they may not have taken ECO 231 and ECO 232.

ECO 441 three credits
Public Economics I
Prerequisites: ECO 231, 232, 301; or permission of instructor

First of a two semester inquiry into the role of government in a market economy. Topics include economic efficiency and the public interest, rationale for government intervention in the private sector and an economic model of the democratic process.

ECO 442 three credits
Public Economics II
Prerequisites: ECO 231, 232, 301, 441; or permission of instructor.

Concerns itself with the economic and behavioral effects of government's spending tax policies. Topics include the effect of tax policy on private investment, saving and labor supply, as well as other issues related to the effects of different government economic policies.

ECO 443 three credits
State and Local Public Economics
Prerequisites: ECO 231 and upper-class standing

State and local public economics explores the major economic decisions of subnational governments—taxation and expenditures—and how these decisions affect the allocation of private resources. Specifically, the course focuses on the constraints imposed on state and local governments that are not placed on the federal government.

ECO 452 (LST 452) three credits
Labor and Regional Growth
Prerequisites: ECO 231, 232; or permission of instructor

Review of labor market problems and programs in growing and depressed regions, with special emphasis on New England. Attention focused on the impact of education, training and government manpower programs.

ECO 461 three credits
Urban Economics

An examination of the economics of urban areas, with an emphasis on the location decision of individuals, firms, and industries. Urban problems and public policy decision-making are covered.

ECO 472 three credits
Coastal Resource Economics
Prerequisites: ECO 231, 232; or permission of instructor

An examination of the economic, public policy and regulatory issues affecting coastal zone resources. The focus will be on specific case studies with an emphasis on examining policy and environmental issues. Students will be involved in projects on specific cases.

ECO 492 three credits
Senior Seminar
Prerequisites: ECO 231, 232, and a 300 or 400 level Economics course. Permission of instructor required if prerequisites are not met.

In-depth coverage of an economic topic of contemporary interest; research paper required.

ECO 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

ECO 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

ECO 498 three credits
Honors Thesis

Prerequisite: Junior or Senior Economics Majors enrolled in the Economics Honors Major, and permission of instructor.

Research and preparation of an honors thesis in partial fulfillment of the requirements for the Economics Honors Major. May be taken for credit more than once, up to total 6 credits.

Education

By means of course work, field experiences, and close student-faculty cooperation, the Education Department encourages students to become dedicated, innovative teachers and to understand and appreciate the problems and potential of the American educational system, and also to become more effective citizens in our society.

The Education Department believes that good teachers are essential role models for children in the ongoing development of a dynamic democratic society. For this reason, the department encourages its students to become proficient in various important teaching technologies and to become as open and self-actualizing as their personalities allow. In keeping with these aims, the faculty attempts to share and develop with students an enthusiastic interest in educational research and its findings while also demonstrating in action the importance the department places on the democratic process, scientific methods, cooperative interpersonal relationships, and aesthetic values. The department's philosophy is really a matrix of goals which are seldom perfectly achieved in human experience. In recognition of this fact, and in keeping with the meaning of the goals themselves, the department encourages a continuous evaluation of its work by students and faculty members.

Faculty and Fields of Interest

Armand Desmarais middle and secondary education, methods and materials in business education, teaching strategies curriculum development, teacher preparation, school reform, empowerment, and teaming

Janet Freedman adult education, instructional development, educational administration, teacher preparation, women's studies, library/media resources, innovation and reform

Cynthia Kruger (chairperson) secondary education, curriculum development (K-12); bilingual education, methodology, social studies, reading, teacher preparation

Lawrence D. Singleton tests and measurements, educational research, evaluative research, urban education

Barbara Steele curriculum development (K-12, elementary and middle school), language arts and reading; process writing, whole language, integrated learning, social studies, teacher preparation, qualitative research, field studies, and in-service programs

Elementary and Secondary Education Certificate Programs

Students who elect the complete program become eligible for teacher certification in the Commonwealth of Massachusetts and in most other states. Education certificate candidates at UMass Dartmouth will also pursue an academic major in another department of the university (or will already possess one).

At the elementary level, focus is upon the student's gaining a general liberal education as well as an understanding of the role of the elementary school in American education, and upon practicing specific methods of elementary school teaching and classroom management. The course work reflects traditional as well as contemporary values in elementary school methodology.

At the secondary level, focus is upon the student's mastering an academic discipline and also achieving a solid intellectual foundation in professional education through theoretical and practical "hands-on" course work.

Provisional certification with advanced standing (Tier 1) will be granted upon the completion of a liberal arts undergraduate degree, an undergraduate program of education courses, and student teaching. Standard certification (Tier 2) will be granted upon the completion of a clinical master's degree which should be taken during the candidate's full employment as a novice teacher.

The undergraduate tier of this program, Tier 1, is given below.

UMass Dartmouth's Masters of Art in Teaching (MAT) degree will satisfy the Tier 2 master's curriculum. See the *Graduate Catalogue* for details.

Education Certification Fields at the University

Currently, the following certification programs are offered for provisional certification at UMass Dartmouth, with grade-levels indicated:

Elementary Education Teacher (1-6)

Teacher of Art Education (N-9; 5-12)

Teacher of Business (5-12)

Teacher of Biology (9-12)

Teacher of Chemistry (9-12)

Teacher of English (9-12)

Teacher of French (5-9; 9-12)

Teacher of History (5-9; 9-12)

Teacher of Mathematics (5-9; 9-12)

Teacher of Music (N-9; 5-12)

Teacher of Physics (9-12)

Teacher of Portuguese (5-9; 9-12)

Teacher of Social Studies (5-9; 9-12)

Teacher of Spanish (5-9; 9-12).

Students pursing certification in Business Education who do not possess a degree in the liberal arts must pursue an interdisciplinary major in addition to certification courses. Details are available from the department.

Admission, Progression, and Certification

Qualifications for a*dmission* to the provisional certification program are as follows:

- An interview with the Director of Teacher Certification
- Formal acceptance into a UMass Dartmouth degree program or possession of an appropriate B.A. or B.S. degree
- A cumulative grade point average of 2.7. (A GPA of 2.5 will qualify for probationary status, and the Department of Education will consider students with less than a 2.5 GPA if there are bona fide extenuating circumstances. A formal appeal process has been instituted for this purpose.)
- A sincere interest in becoming a teacher.

Progression requirements

*I*n order to be eligible for *student teaching*, students must have a cumulative grade point average of 2.7 and have successfully completed all required Education courses. The Department of Education may approve students with less than a 2.7 GPA for student teaching if there are bona fide extenuating circumstances. A formal appeal process has been instituted for this purpose.

All Teacher Certification students must achieve a minimum performance level in each elementary, middle, or secondary methods course in order to progress to the next course in the sequence, as determined by explicit standards of assessment set by the instructor.

Massachusetts certification requirement

As they approach completion of their programs, all candidates for teaching certification in the State of Massachusetts must take and pass a teaching examination administered by the Bureau of Teacher Certification, beginning with the class of 1998. The test is in two parts—command of the discipline of knowledge (art history, aesthetics, and art education) and general literacy.

Art Education and Music

See the sections elsewhere in this catalogue for information about admission to and progression in these programs.

Contacts: Marie Nelson, Director of Music Education
Peter London, Chairperson, Art Education

Elementary Education Certification

Tier 1 requirements for provisional certification with advanced standing		Field-based Experience	Credits
Sophomore Year			
EDU 205 PSY 201	Human Development and Learning **OR** Child Psychology		3
AED 460	Art for the Elementary Classroom		3
MUS 101 MUS 316	Introduction to Music **OR** Teaching Children Music (K-9)		3
	A course in non-Western civilization*		3
MTH 108	Modern Math for Elementary Teachers		3
	A science course		3
EDU 206	Teaching as Profession—Elementary	25 hours pre-practicum	3
Junior Year			
EDU 303	Elementary Curriculum Methods (Math and Science)	15 hours pre-practicum	3
EDU 304	The Language Arts: Reading, Writing, Listening, Speaking	25 hours pre-practicum	6
EDU 329	Teaching Social Studies in the Elementary School	15 hours pre-practicum	3
EDU 347	K-12 Inclusionary Classroom		3
Senior Year			
EDU 414	Elementary Practicum	400 hours supervised student teaching	12
EDU 416	Elementary Workshop		3
		Total	**50**

* A three credit course in African, Asian, Latin American, or Russian History, which may carry a History or Sociology/Anthropology prefix.

Middle/Secondary School Education Certificate

Tier 1 requirements for provisional certification with advanced standing		Field-based Experience	Credits
Sophomore Year			
EDU 207	Teaching as Profession—Middle and Secondary	25 hours pre-practicum	3
PSY 215	Adolescent Psychology		3
	A course in non-Western civilization*		3
Junior Year			
EDU 326	Contemporary Middle and High School Education Prerequisite: EDU 207	25 hours of pre-practicum	3
EDU 327	Classroom Instruction in the Middle and Secondary School	25 hours of pre-practicum	3
	Discipline Methods Course**		3
EDU 347	K-12 Inclusionary Classroom		3
Senior Year			
EDU 415	Middle/Secondary Practicum	400 hours of supervised student teaching	12
EDU 417	Middle/Secondary Workshop		3
		Total	**36**

Please note that EDU 315 Reading Improvement in Middle and High School is strongly recommended in addition to the requirements for middle and secondary certification.

*
A three credit course in African, Asian, Latin American, or Russian History, which may carry a History, Sociology/Anthropology, or Social Studies (SST) prefix.

**
Each certification area has its own methods course. Foreign Language students must complete 9 credits of coursework. Please see department course listings.

Education Courses

EDU 201 three credits
Philosophy of Education

An introduction to major issues and problems in philosophy of education. Examination of some of the traditional areas of philosophical concern, and their relevance to the teacher-learning process is undertaken.

EDU 205 three credits
Human Development and Learning

A study of central development tendencies and stages as these underlie the unfolding of human potentialities. Consideration will be given to those conditions and factors which influence learning and forgetting. The nature of intelligence, the nature of learning, and the meaning of personality will be examined in the context of the teacher-learning process. This course meets the Massachusetts Office for Children requirements for day care center certification, OFC Category A, Child Growth and Development.

EDU 206 three credits
Teaching as a Profession: Elementary
Includes 20 hours pre-practicum

Introduction of potential teachers to the real world of teaching through an in-depth, candid analysis of the teaching profession today. This course will explore the challenges and rewards of teaching; study the history, philosophy, sociology, and politics of American education; and focus on the major educational issues, trends, and reform of the 1990s. Current educational thought and research will be analyzed. Students complete a 25 hour pre-practicum in a local elementary school.

EDU 207 three credits
Teaching as a Profession: Middle and Secondary
Includes 60 hours pre-practicum

Introduction of potential teachers to the world of teaching through an in-depth, candid analysis of the teaching profession today. This course will explore the challenges and rewards of teaching; study the history, philosophy, sociology, and politics of American education; and focus on the major educational issues, trends, and reform of the 1990s. Current educational thought and research will be analyzed. Students complete a 25 hour pre-practicum in a local school.

EDU 220 three credits
Interpersonal Communications

Effective communication through a process of human interaction. Students in this course study the nature of that interaction, in theory and experientially, through examination of the parts of the process: person, message, environment, and relationship.

EDU 273 variable credits
Non-Traditional Prior Learning

Students prepare a portfolio to document non-traditional prior learning, for review by department(s) in consideration of award of credit.

EDU 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

EDU 303 three credits
Elementary Curriculum Methods (Mathematics and Science)
Includes 20 hours pre-practicum
Prerequisite: EDU 206, 329; EDU 329 can be taken concurrently

The study of the theory and application in classrooms of Mathematics and Science. Relying on Piagetian development principles, students realize the importance of selecting materials and techniques wisely, especially the use of concrete material in curriculum planning. They also learn to recognize the varied needs of students. This course includes 20 hours of pre-practicum.

EDU 304 six credits
The Language Arts: Reading, Writing, Listening, and Speaking
Includes 25 hours pre-practicum
Prerequisites: EDU 206, 329; EDU 329 can be taken concurrently

Theoretical, philosophical and practical issues are utilized in the addressing of the centrality of reading, writing, listening, speaking, viewing, and visual representation to learning. Current and traditional issues and research about language arts instruction, especially the teaching of reading and writing are compared and contrasted. 25 hours of pre-practicum are required.

EDU 315 three credits
Reading Improvement in the Middle and High School

The development of knowledge and understanding of corrective and developmental reading. Causes of reading difficulties among secondary school students are discussed along with effective means of remedying them. Also discussed are study skills needed by senior high school students and strategies for teaching these skills.

EDU 326 three credits
Contemporary Middle and High School Education
Includes 25 hours pre-practicum
Prerequisite: EDU 207

Equity, diversity, motivation, alternative assessment, multicultural education, and the social problems of adolescents in middle and high school. Provisions for the inclusion of special needs students, state and federally-mandated educators are pursued through cooperative learning with an instructional prototype as the result. Students complete extensive reading assignments, written reports, action research, varied assessments, and a demonstration project.

EDU 327 three credits
Classroom Instruction in the Middle and Secondary School
Includes 25 hours pre-practicum

Education methods for middle and secondary levels, designed for prospective teachers in all disciplines and employing a generic/integrated approach to classroom curriculum and pedagogy. Particular attention will be paid to diversified learning needs and styles of all students in the planning, teaching, and evaluation phases of pedagogy. Development of teaching/learning plans, including unit and lesson construction, varied learning strategies, audio-visual materials, and classroom evaluation comprise the core of this education methods course.

EDU 329 three credits
Teaching Social Studies in the Elementary School
Pre- or Corequisite: EDU 206 or concurrent with EDU 303, 304

The teaching of the social studies within the elementary school. An emphasis will be placed on interactive methodology, current issues and trends, theoretical issues, and unit development and lesson planning. 15 of pre-practicum are required.

EDU 330 three credits
Teaching Methods and Materials in Managing Business Education

Basic methods and materials that relate to the instruction of business education. Particular emphasis will be devoted to teaching and developing alternative curricula designs and resource units in a variety of business subjects.

EDU 333 three credits
Exceptional Child I

The problems of communication and understanding in children exemplified by the labels "deaf," "hard of hearing," "phasic," "physically handicapped," "speech and hearing handicapped."

EDU 334 three credits
Exceptional Child II

Problems in children and adults represented by the labels "emotionally disturbed," "mentally retarded," and "learning disabled."

EDU 336 three credits
Transpersonal Education

The development of analytical and intuitive functioning. An experience-based learning environment supports theoretical understanding and internal awareness. Content includes an examination of altered states of consciousness and the process of shifting from outer to inner states through the use of techniques such as fantasy, relaxation, music, body movement, sensory stimulation, and natural phenomena as they relate to teaching.

EDU 340 three credits
Methods and Materials in Teaching English in the Secondary School

Objectives, strategies, and material development in the English classroom. The teaching of English will be discussed in terms of student learning modalities, needs, and interests. Units, lesson plans, book and periodical reporting are course requirements in addition to class and field experience. This course is mandated by the Massachusetts

Department of Teacher Certification of secondary-school English teachers.

EDU 347 three credits
The Inclusionary K-12 Classroom

A study of inclusive education, including definition, historical and legal perspectives, philosophical implications, and organizational restructuring. Students will examine a variety of teaching methods effective in the inclusive setting, including curriculum modification, delivers content instructional models, goal setting, and alternative assessment. Research of the literature, development of an Individualized Educational Plan (IEP), curriculum and lesson planning, material development, and field experiences will support the development of essential professional skills.

EDU 350 three credits
Educational Research

Prepares students to evaluate work conducted in the area of educational research. Studies include true experiments, quasi experiments, descriptive studies, and sampling methods, along with other areas pertinent to educational research.

EDU 353 three credits
Education: Administration and Supervision

General introduction to contemporary practices and policies in educational administration and supervision. Instruction will be by lecture, case studies, and student reports. Topics covered include curriculum planning and design, staff organizations and relationships, and student and community relationships.

EDU 367 three credits
Principles of Counseling: Theory and Practice

An intensive study of counseling techniques and processes through the use of interviews, case studies, tapes, and films.

EDU 370 three credits
Urban Education

Designed to offer a broad focus on the urban student as contrasted with his/her rural/suburban counterpart. Current educational problems with historical perspectives speak to reform and change in urban schools and community settings.

EDU 376 three credits
Using Educational Technology
Prerequisite: Familiarity with personal computing and word processing; junior or senior standing

Exploration of educational technology for practitioners at elementary and secondary levels. Computer software, CD ROM and laser disk applications, educational telecommunications, and network resources are examined.

EDU 380 three credits
Seminar in Lifelong Learning: The Elderly
Prerequisite: GRT 201

Seminar in lifelong learning for professionals delivering services to the elderly. Students will be involved in discussions, readings, and experiences to deepen insight and understanding of the elderly who are learning new attitudes and skills and gaining new understanding about themselves and society's attitudes toward them. Each student will choose an elderly partner in the community and spend *at least* two hours a week with that partner. Cross-listed as GRT 380.

EDU 393 three credits
The Newspaper as a Tool for Reading Instruction

Analysis of basic reading skills (comprehension, vocabulary development) and transfer of these basic skills to content area reading. Identification of specific reading needs, correlation of reading instruction with a student need assessments, and the development of reading material reflecting reading skills and student needs are also addressed through the use of the newspaper as a tool in reading instruction. This reading course is designed for teachers in grades K-12.

EDU 402 three credits
Tests and Measurements

The development and use of tests and the application of measurement devices in teaching, evaluation and research. This course deals with assumptions of testing and observation, the development and utilization of objectives, and basic statistics of measurement. This course is generally required by most graduate schools of education.

EDU 406 three credits
Seminar in Guidance and Counseling I

An analysis and discussion of contemporary counseling procedures in relation to personality and behavior. The theoretical principles and practical applications of various modalities will be examined in association with sound-film demonstrations of the related practices.

EDU 407 three credits
Seminar in Guidance and Counseling II

Advanced work and research in matters that relate to Guidance and Counseling. The seminar will be organized into topics clustering around the interests of students. Each student will undertake a research project followed by a presentation to the group for examination and criticism.

EDU 409 three credits
Sociology of Education

A study of social processes underlying education. Major areas covered include the current social forces affecting education, the place of the school in American culture, the impact of social stratification on education, and the role of the teacher in a period of rapid social change.

EDU 410 three credits
Educational Measurements

Assists the student in evaluating research conducted in the area of descriptive and inferential statistics. Concepts such as central tendency, correlation, regression, variability, T-test, analysis of variance, Chi-square, and hypothesis testing will be discussed in depth.

EDU 411 three credits
Children's Literature in the Elementary School

A survey of reading material available for children. Part of the time will be devoted to writing children's stories.

EDU 414 twelve credits
Practicum (Elementary)
Corequisite: EDU 416

A fifteen-week full-time classroom experience under the direction of university faculty and cooperating classroom teachers.

Complete course descriptions are available in the *Graduate Catalogue*.

EDU 415 twelve credits
Practicum (Middle and Secondary)
Corequisite: EDU 417

A fifteen-week full-time classroom experience under the direction of university faculty and cooperating classroom teachers.

EDU 416 three credits
Workshop (Elementary)
Corequisite: EDU 414

Small group meetings, workshops, and discussions with university faculty and other key school personnel about critical incidents and issues arising from and related to the interns' actual teaching experiences.

EDU 417 three credits
Workshop (Middle and Secondary)
Corequisite: EDU 415

Small group meetings, workshops, and discussions with university faculty and other key school personnel about critical incidents and issues arising from and related to the interns' actual teaching experiences.

EDU 420 three credits
Teaching Reading in the Elementary School
Prerequisite: EDU 206

The purpose of this course is to develop some understanding of the complex reading process. Instructional materials and organizational patterns to promote growth in basic abilities will be discussed.

EDU 426 three credits
Workshop in Early Childhood Education
Prerequisite: Any course in Early Childhood Education, current work with young children, or permission of instructor.

Creating and using learning experiences in art, music, language, literature, drama, nature study and human, relationships.

EDU 433 three credits
Workshop in Transpersonal Education
Prerequisite: EDU 336 or permission of instructor

Experience-based learning in exploration of intuitive aspects of the individual. Content includes study of a new image of humanness, alternative states of consciousness, impulses toward a harmonious approach to living, and recent research on intuition and creativity

EDU 451 three credits
Contemporary Issues and Challenges

Understanding contemporary problems such as drugs, violence, sexism, and racism, in relation to the school setting.

EDU 485 three credits
Career Information and Placement

Theory and research in career development, functions of occupational information in guidance, the role of the counselor in placement, and models for an effective placement office.

EDU 495 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Individual study of additional areas needed for teacher certification, including methods in specific disciplines, reading, etc. Terms and hours will be arranged. Confer with appropriate members of the Education Department.

EDU 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged. Confer with Department Chairperson and Director of Teacher Certification.

Other

EDU 551 three credits
Contemporary Issues and Challenges

A variable-topics course for education topics of current interest. Not usually accepted for credit in the MAT. Recently offered topics include Authentic Assessment, Leadership Mentoring, Teaching and Learning Intuition, Teaching and Learning About Women.

Courses for the Masters of Art in Teaching

EDU 607 six credits
Teaching for the 21st Century

A year-long study which explores the philosophy, the underlying theories, and the classroom applications of current paradigm shift in education.

EDU 610 three credits
Developmental Language Arts

Surveys methods of teaching the language arts which take into consideration elementary and middle school students' needs and abilities.

EDU 611 three credits
Developmental Reading

A study of the cultural, social and psycholinguistic principles, strategies and practices underlying reading and learning to read.

EDU 612 three credits
Teaching Writing in the Elementary and Middle School

A developmentally appropriate model to provide participants with the theory, the tools, and the support to create a writing program in their classrooms.

EDU 613 three credits
Literature for the Elementary and Middle School Child

Introduces methods of bringing literature to children grades K-8.

EDU 615 three credits
Current Trends in the Teaching of Social Studies in Elementary and Middle Schools

Social studies as a tool to help young people develop the ability to make informed decisions for the public good as citizens of a culturally diverse, democratic society in an independent world.

EDU 625 / FLL 625 three credits
Alternative Assessment and The National Standards in Foreign Language Education

A critical examination of recent theory and practice concerning the role of assessment in foreign language curricula.

English

Faculty and Fields of Interest

In scheduling its courses, the English Department recognizes its obligations to its English majors—a group that includes those who intend to go on to graduate study, those who intend to enter the teaching profession, and those who plan careers in such areas as public relations, editorial work, journalism, technical and professional writing, creative writing, personnel work, and the like. The department also recognizes its obligations to non-English majors—those students who elect English courses in order to gain some acquaintance with the rich cultural heritage that English, American, and comparative literature provide, and those who, through advanced courses in writing, wish to improve their powers of communication.

In addition, the department provides a Freshman program that includes introductory composition courses (ENL 100, 101, 102), testing and evaluation of writing ability of incoming students, English-as-a-second language instruction, and professional communications courses for the students in business, technology, engineering, and computer science programs.

English majors are offered a choice of three options: the literature option, the writing/communications option and the drama/film studies option, each leading to a Bachelor of Arts degree. These options reflect the department's conviction that perceptive reading, effective writing, and clear thinking are interconnected.

The English department also offers a graduate program leading to a Master of Arts degree in professional writing designed to give students a background in rhetorical and communication theories and the advanced skills necessary for professional jobs in business, government, media, teaching, industry, or publishing.

James Bobrick modern poetry, Renaissance literature, children's literature, fantasy

Tish Dace contemporary drama, Black drama, women's drama, review writing

Keith Duffy English education

Raymond A. Dumont composition theory, professional communications, computer applications, rhetorical theory

Janet Gardner dramatic literature, computers and literary study

Louise A. Habicht American literature, regional literature, multicultural American literature (also Director of University Honors Programs)

Everett H. Hoagland African-American literature, African and West Indian literature, creative writing (poetry)

Catherine Houser literary nonfiction, creative writing (fiction), professional writing

Barbara R. Jacobskind American literature, women's literature

Joan Kellerman ESL, creative writing (poetry), comedy, literature and psychology

John M. Lannon composition, professional writing

Richard J. Larschan medieval literature,18th-century British literature, satire

James E. Marlow 19th-century British literature, theory of fiction, creative writing (fiction and drama)

James M. Nee myth and literature, Irish literature, acting, film and video

William Nelles critical theory, medieval literature

Peter Owens journalism, editing, research methods, computers and writing, creative writing (fiction)

Alan R. Rosen Victorian poetry and poetics, Modern British and American fiction, research methods, scriptwriting

Roger Sorkin Shakespeare, Greek through 20th Century drama, film

Lulu C. H. Sun rhetoric and composition, English education, English romantic literature

Judy Schaaf (dean of the college of arts and sciences) 19th century American literature, Medieval English literature, literature of the environment

Ian G. Strachan Carribean and colonial literature

Edwin J. Thompson (chairperson) comedy, film, post World War II fiction

Linus Travers restoration-18th-century British literature, drama, comic literature, grants writing

John Luther Wallin rhetoric, ethics in professional writing, environmental writing, documentary writing, science journalism

Robert P. Waxler romanticism, Jewish studies, professional writing, communication theory

Charles W. White III American literature, film

To receive a degree with a major in English, students must demonstrate their ability to read intelligently and perceptively in such genres as fiction, poetry, and drama, in works of literary criticism and literary history, and in works dealing with the nature of language itself. Candidates must also demonstrate the ability to write effectively, to use a library efficiently and honestly, to deal critically with generalizations about historical periods and genres, and to handle a variety of critical questions with some maturity.

The English department offers three options within the major: the literature option, the writing/communications option, and the drama/film studies option.

Writing/communications candidates must demonstrate their ability to analyze rhetorical problems while composing effective, well-formulated documents for specified audiences and to create documents using appropriate computer software.

Students who select the drama/film studies option will master analytical approaches to and historical development of dramatic literature and film as well as their relationship to the development of other genres. In addition, they will learn to create effective written work in the form of reviews, critical essays, and stage or screen plays. Although this option will concentrate on courses in literature and writing, students are encouraged to participate in theater and/or film production and to arrange an appropriate off-campus applied internship.

English Major
Literature Option

Requirements

		Credits
ENL 300, 302	Survey of British Literature I and II	6
ENL 303	Survey of American Literature I	3
ENL 319	Shakespeare	3
ENL 236	Ancient World to the Renaissance	3
ENL 260* or 361	Intermediate Composition or Techniques of Critical Writing	3
One of the following:	ENL 305, 307, 308, 318, 321	3
Three literature courses at the 300-level		9
One 400-level literature seminar		3
Three additional English courses		9
	Total	**42**

* a prerequisite for any 300-level writing course

English Major
Writing/Communications Option

Requirements

		Credits
ENL 300, 302	Survey of British Literature I and II	6
ENL 303	Survey of American Literature I	3
ENL 319	Shakespeare	3
ENL 236	Ancient World to the Renaissance	3
ENL 260*	Intermediate Composition (must be taken at UMass Dartmouth)	3
One of the following:	ENL 262, 265, 266, 350, 362	3
ENL 355 ENL 356	Rhetorical Theory **OR** Language and Culture	3
One 400-level writing/communications workshop (or approved 600-level graduate writing course)		3
Three additional writing/communications courses, one at the 300-level		9
Two additional English courses, one a literature course		6
	Total	**42**

* a prerequisite for any 300-level writing course

English Major
Drama/Film Studies Option

		Credits
ENL 300, 302	Survey of British Literature I and II	6
ENL 303	Survey of American Literature I	3
ENL 319	Shakespeare	3
ENL 236	Ancient World to the Renaissance	3
ENL 260*	Intermediate Composition (must be taken at UMass Dartmouth)	3
ENL 253 / ENL 255	Introduction to Drama **OR** Introduction to Film	3
ENL 321	Golden Ages of Drama	3
ENL 362	Review Writing	3
One 400-level seminar in dramatic literature or film; or writing workshop in drama or film (or approved 600-level graduate writing course)		3
Two 300-level drama or film courses		6
One creative drama or film course		3
One additional English course		3
	Total	**42**

* a prerequisite for any 300-level writing course

English Minor
Literature Option

	Credits
Three of the following: ENL 300, 302, 303, 304, 236	9
ENL 319 Shakespeare	3
Three additional literature courses	9
Total	**21**

English Minor
Writing/Communications Option

	Credits
Three writing courses (one at the 300-level)	9
One 400-level writing workshop	3
Three literature courses (one at the 300-level)	9
Total	**21**

English Minor
Drama/Film Studies Option

Twenty-one credits (7 courses) are required in the following distribution: 3 in intermediate composition, 9 in film, and 9 in drama.

ENL 253 **or** 255	3
ENL 260* Intermediate Composition (must be taken at UMass Dartmouth)	3
ENL 319 Shakespeare	3
One course in dramatic literature or film literature (e.g., ENL 217, 253, 276, 287, 321, 332, 348, 377)	3
One creative drama or film course (e.g., ENL 269, 278, 378, 453 or possibly a creative drama or film course in a foreign language	3
One 300-level drama or film course **or** ENL 362 (applied drama course may be taken through Experiential Learning or Independent Study)	3
One 400-level seminar in dramatic literature or film literature **or** a 400-level writing workshop in drama or film	3
Total	**21**

* a prerequisite for any 300-level writing course

English Honors Program

Candidates must have completed a minimum of 6 English courses beyond the freshman level and have maintained a minimum GPA of 3.2 in all English courses taken, to be considered for admission to English Honors. Qualified candidates will be admitted upon recommendation of an English department faculty member willing to serve as sponsor.

Requirements
The program involves a closely supervised, two semester (6-credit) investigation into some literary, creative, or rhetorical topic devised by the student in consultation with the faculty sponsor, and requiring a substantial amount of independent reading and research.

The program consists of two separable halves: The first part (ENL 491 or ENL 493) consists of intensive reading and study in the area of the student's proposal, based on the approved bibliography. By the end of semester I, students must (1) present a written proposal for an Honors Project and (2) take a written examination in the area of study—both to be administered and graded by the faculty sponsor. In this way students may receive three credits and a grade even if they decide not to continue in the full program. Based on the outcome of written work to date, the faculty member can assess whether to permit the student to continue: a minimum grade of "B" is required.

In the second semester the student composes the Honors paper (ENL 492 or ENL 494), and a grade is awarded on the basis of this final paper. However, "Honors" will be awarded separately, according to criteria set forth below. (Hence it will be possible to make independent decisions on the awarding of "Honors," or mere credit.)

Criteria and Methods of Evaluation
A three person faculty committee—preferably one of them a specialist in the field under investigation—will judge all written work and administer an oral examination on the subject of the Honors Thesis (Students are entitled to select one of their examiners.) This committee will then award "Honors" or not, on the basis of the following criteria: (1) overall seriousness of purpose; (2) mastery of scholarly or creative methodology; (3) sophistication of insights achieved; (4) ability to relate findings verbally.

Implementation
Each spring the department will inform all junior English majors with the minimum grade point average that they qualify to participate in the Honors Program, and indicate what the program entails. Students will be responsible for selecting their own sponsors. No department member will be expected to direct more than one Honors student per year.

Note: ENL 101 and ENL 102 are prerequisites for all upper-division English courses unless otherwise noted.

ESL 100 three administrative credits*
Basic English as a Second Language

An introductory review of English language, reading, writing, speaking, and study skills designed for non-native speakers of English. This course requires work in the language lab and the Writing/Reading Center as well as class. The course focuses on ESL readings, idiomatic usage, vocabulary building, grammar review, pronunciation, conversation, listening skills, and composition.

ESL 101 three credits
English as a Second Language
Prerequisite: ESL 100 or by pre-test placement

A writing course for non-native speakers who have developed basic proficiency in English. Students address rhetorical problems using complex syntactical and grammatical structures suitable for abstract thinking and academic discourse. Preparation for ENL 101.

ENL 100 three administrative credits*
Basic English Review

A course offering writing practice for those students lacking sufficient preparation for ENL 101. This course develops rhetorical awareness and effectiveness, as well as fluency in standard English, through focus on essential features common to any writing situation (purpose, audience needs, content, organization, style, and correctness) at the level of paragraph and basic essay. One hour per week in the Writing/Reading Center in addition to three class hours.

* Administrative credits do not count towards the total required for graduation.

Gen Ed Note 1: English 101 and 102 satisfy the "Tier 1" requirements in Information/Computer Literacy and in Writing Skills.

Gen Ed Note 2: In English, all literature and creative writing courses satisfy Cultural/Artistic Literacy. Eligible lower division courses are marked **C**; many advanced courses are eligible as well.

G Global Awareness
D Diversity
W Writing-Intensive Course
O Oral Skills

ENL 101 three credits
Critical Writing and Reading I

Writing in a variety of modes for various purposes and audiences; writing to communicate and to learn in the humanities. Rhetorical choices and revision strategies will be studied. Students will develop skill in critical reading necessary for thinking and writing.

ENL 102 three credits
Critical Writing and Reading II
Prerequisite: ENL 101

A course designed to advance the rhetorical skills and understanding developed in ENL 101. Critical reading of various literary genres and analytic and argumentative writing assignments enhance the student's awareness and use of effective language.

ENL 200 three credits **C**
Studies in Literature

A study of selected readings dealing with a special topic chosen by the instructor. Recent special topics include New England Literature, Children's Literature, the Artist in Literature, Black Music and Black Literature. May be repeated with change of content.

ENL 201 three credits **C**
Major British Writers

A study of selected works, from several genres, by outstanding British authors.

ENL 202 three credits **C**
Major American Writers

A study of selected works, from several genres, by outstanding American authors.

ENL 203 three credits **C**
Survey of World Literature I

A study of selected masterpieces from the Golden Age of Greece to the Renaissance.

ENL 204 three credits **C**
Survey of World Literature II

A study of selected masterpieces from the Renaissance to the present.

ENL 205 three credits
Travel Literature
Prerequisite: ENL 102

Reading and discussion of important works of travel literature from a wide range of periods and genres, with particular emphasis on international and multicultural narratives.

ENL 206 three credits **C**
Detective Fiction

A study of famous mystery, suspense, and detective fiction.

ENL 208 three credits **C**
Myth and Literature

An exploration of the role of myth and dream in poetry, fiction, film, and drama. Heavy emphasis on Jungian and Freudian interpretation of myth, but not to the exclusion of other anthropological, psychological, or theological approaches, through readings in Homer, Ovid, *Beowulf*, Shakespeare, Coleridge, Joyce, and Hesse.

ENL 209 three credits **C**
The Bible as Literature

Readings from the Old and New Testament discussed in the context of the history of ideas, literary genres, the effectiveness of communication to the intended audience, and influences on other literature.

ENL 210 three credits **C**
Literature of the American West

An exploration of the myths and realities of the American West (west of the Mississippi) as they are reflected in literature—e.g., the cowboy, westward expansion, the Spanish conquistadors.

ENL 211 three credits **C**
The American Dream

A study of the meaning of success as reflected in works ranging from those of Benjamin Franklin and Horatio Alger to the plays of Arthur Miller.

ENL 214 (AAS 214; WMS 214)
three credits **C**
African-American Literature

Chronological survey beginning with Gustavus Vassa and Robert Hayden's "Middle Passage" and continuing through contemporary writers. Toward the end of the course there will be focus on new women writers and major writers through the 1990s.

ENL 215 three credits **C**
West Indian and African Literature

A study of important and innovative West Indian and contemporary African writers.

ENL 216 three credits **C**
Comedy and Satire

A study of the philosophy and psychology of literary and other forms of comedy and satire, including works by such writers as Aristophanes, Shakespeare, Swift, Voltaire, Wilde, Shaw, Waugh, Heller, Vonnegut, and others, as well as film artists such as Chaplin, Sellers, and Woody Allen.

ENL 217 three credits **C**
Greek Myth and Drama

An exploration of the role of myth in the creation of the plots of Aeschylus, Sophocles, Euripides, and Aristophanes.

ENL 218 three credits **C**
Literature and Society

A study of the relationship between the individual and society through readings in modern literature.

ENL 219 three credits **C**
Classicism and Romanticism

A course contrasting the two major modes of thought in Western Civilization to show what part each has played in the creation of major works of literature, with consideration of analogous examples from music, painting, sculpture, and architecture.

ENL 221 three credits **C**
Special Topics in Comparative Literature

A course dealing with literature of two or more countries, based on a topic selected by the instructor. May be repeated with change of topic.

ENL 223 three credits **C**
Fantasy Literature

A study of fantasy as a genre, comparing other works with Tolkien's *Lord of the Rings* trilogy.

ENL 224 three credits **C**
Jewish Literature

A study of modern Jewish stories and novels with emphasis on such writers as Singer, Bellow, Wiesel, Malamud, and others.

ENL 225 three credits **C**
Native American Literature

Reading, studying, thinking critically, and writing about Native American literature.

ENL 226 three credits **C**
Multicultural American Literature

A study of imaginative literature by writers representing the rich variety of racial, ethnic, religious, social, and regional groups in America. Specific focus of the course may vary depending on the instructor.

ENL 227 three credits **C, O**
Semiotics of Culture

Introduces basic theories of communication and models of semiotic analysis. Topics include iconicity, proxemics, kinetics, and the multiple levels of decoding. Readings include analysis of common cultural artifact, verbal and visual media. Students will analyze popular myths and television and print advertising.

ENL 228 three credits **C**
Semiotics of Media

The semiotics of media introduces theories of communication tailored for the verbal arts. Such topics as iconology, iconicity, and hegemonic coding in art style are examined to broaden interpretations of poetry, fiction, film, and theater.

ENL 236 three credits **C**
Ancient World to the Renaissance

A study of the origins of English literature embedded in Biblical, Classical, and Medieval sources, with special emphasis on Homer, the Greek dramatists, Virgil, and Dante. Designed to help English majors understand the allusions that enrich English literature.

ENL 245 three credits **C**
Images of Woman in Literature

A study of archetypes and stereotypes of women in literature from the ancient world to the present in an attempt to reevaluate traditional literary criticism and the way authors have used images of women to create character, plot, etc. Cross-listed WMS 245.

ENL 246 three credits **C**
Women Writers

Examination of the relationship between the woman writer and her work through a study of literature by and about women. Satisfies literature distribution requirement. Cross-listed WMS 246 and AAS 246

ENL 249 three credits **C**
The World of Work

An examination of the personal and social importance of work in human society through literary, sociological, and anthropological texts which explores these issues: the meaning, value, and organization of work in non-industrial and industrial societies; the effects of value systems on the work process; the problems surrounding work in contemporary America (gender, age, race, class, worker/management relations); and the future of work will be explored. Cross-listed SOC 249/ANT 249.

ENL 250 three credits **C**
Introduction to Poetry

A course in the analysis of poetry showing how formalistic and thematic elements in the poem interact to create meaning through an examination of a variety of poetic forms.

ENL 251 three credits **C**
Introduction to the Short Story

A consideration of short fiction to illustrate the history, range, and properties of the genre. The course treats such representative authors as Poe, Hawthorne, Tolstoy, Joyce, Faulkner, and other 19th and 20th century figures from a variety of national literatures.

ENL 252 three credits **C**
Introduction to the Novel

A study of how to read and identify the various types of novels, coupled with an introduction to the history of the novel.

ENL 253 three credits **C**
Introduction to Drama

An introductory course in how to read and view a play, including instruction in the nature and methods of tragedy, comedy, melodrama, tragicomedy.

ENL 254 three credits **C**
Autobiographical Writing

A course emphasizing the development of techniques of lifewriting through exercises in journal-keeping and autobiographical writing. The course includes readings in sample journals and autobiographies and study of autobiographical theory.

ENL 255 three credits **C**
Introduction to Film

Provides beginning students of film with a comprehensive view of its history, aesthetics, and critical terminology. Attention will also be paid to elementary film theory, to a comparison of film with other genres (especially drama and narration), and to representative works of such major figures in the artistic development of the genre as Chaplin, Renoir, Welles, Bergman, Hitchcock, and Kurosawa.

ENL 260 three credits
Intermediate Composition

A course emphasizing the development of skill in organizing materials, the formation of a lively and concrete style and an authentic personal voice, and the growth of useful techniques in the arts of exposition, persuasion, and argumentation.

ENL 262 three credits **W**
Journalism I

An exploration of the principles of journalism as applied in effective news writing and media reporting. Students develop skills in story design and structure, note-taking and story development, accuracy, balance, fairness, style, and writing technique. Legal and ethical issues are explored in detail as students develop and write local stories.

ENL 265 three credits **W, O**
Business Communications

An introduction to the communication skills required in business and industry which emphasizes writing and revising business reports and proposals, letters and memorandums and on preparing and presenting oral reports. Computer applications are included.

ENL 266 three credits **W**
Technical Communications

An introduction to the many purposes, audiences, forms, and formats of technical documents and professional correspondence. Students practice writing and editing letters, memos, and reports to achieve worthwhile content, sensible organization, and readable style and learn techniques of audience-and-use analysis to adjust a message's level of technicality to the needs

Note: ENL 101 and ENL 102 are prerequisites for all upper-division English courses unless otherwise noted.

and background of its audience. The course focuses throughout on writing as a deliberate process of deliberate decisions. Computer applications included.

ENL 267 three credits **C**
Creative Writing: Poetry

The study of contemporary techniques in the writing of poetry. Manuscripts are read and discussed in class and during individual conferences. Workshop format.

ENL 268 three credits **C**
Creative Writing: Fiction

A course concentrating on the techniques of writing fiction. Manuscripts are read and discussed in class and during individual conferences. Workshop format.

ENL 269 three credits **C**
Creative Writing: Drama

A study of the fundamental principles of dramaturgy. Manuscripts are read and discussed in class and during individual conferences. Workshop format.

ENL 270 three credits
Speech Communication

An introduction to the art of public speaking through the study of effective principles combined with practice in speaking before a group.

ENL 271, 272 three credits each **C, O**
Oral Interpretation of Literature I, II

Study of and practice in the oral interpretation of literary works with heavy emphasis on acting and the Stanislavski method.

ENL 276 three credits **C**
Film as Drama

An intensive study of outstanding films with attention to the techniques of film criticism.

ENL 278 three credits **C**
Writing for Media

An introduction to writing for various media, including radio and television, advertising and public relations, focusing on adapting message to medium, audience, and purpose.

ENL 279 three credits **W**
Tutoring Writing: Theory and Methods — Honors
Prerequisites: Honors Program or 3.20 GPA; by nomination and invitation only

The training course designed for the Honors Writing Fellows Program. The course provides students opportunities to learn about on-going theoretical conversations regarding composition instruction, collaborative tutoring, and writing pedagogy. Students learn to use their theoretical knowledge to determine strategies for assisting peers with their written work. Once class hour per week is devoted to application in the Writing Center or in fellowing papers from a class, taping, and analyzing tutorial sessions, and interviewing faculty members about writing in the disciplines.

ENL 293 three credits **C**
Literature of the American South

A study of such Southern writers as Faulkner, Wolfe, Warren, McCullers, O'Connor, Ellison, Ransom, Tate, and Tennessee Williams with the following questions in mind: What was the mood of the South which produced the 20th century renaissance? In what manner are the works related to or dependent on the writers' Southern background? What is the relationship of Southern to American literature?

ENL 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

ENL 299 three credits **C**
Introduction to Shakespeare

A course designed primarily for non-English majors, which examines some of the typical plays of the greatest dramatist in the English language.

ENL 300 three credits
Survey of British Literature I

A study of British literature from *Beowulf* to 1798, with attention given to the cultural and historical context.

ENL 302 three credits
Survey of British Literature II

A study of British literature from 1798 to the mid-20th Century, with attention given to cultural and historical context.

ENL 303 three credits
Survey of American Literature I

A survey of American writing from the Colonial Period to the Civil War, with emphasis on the historical, cultural, and philosophical developments which parallel the development of an American literature.

ENL 304 three credits
Survey of American Literature II

A continuation of ENL 303. A survey of American writing from the Civil War to the present, with some emphasis on historical, cultural, and philosophical developments in America during the period covered.

ENL 305 three credits
Medieval Literature

Reading and discussion of major works of medieval literature. This course focuses on English literature from *Beowulf* to Malory, but includes translations of key sources and analogues from other literatures.

ENL 307 three credits
The English Renaissance

A chronological overview of the major literary works, themes, and genres of the English Renaissance from Caxton and the inception of printing through Milton and the last of the great Renaissance epics. The course focuses on the development of poetic genres and on representative prose forms. Writers studied include Spenser, Sidney, Shakespeare, Donne, Herbert, Vaughn, and Milton.

ENL 308 three credits
The Enlightenment

A study of English Neo-classical and Pre-romantic writings by Dryden, Swift, Pope, Fielding, Johnson, Boswell, Goldsmith, and others.

ENL 309 three credits
The Romantic Age

A survey of English literature from 1796-1832 stressing the major poets—Blake, Wordsworth, Byron, Shelley, and Keats, with some study of novels and personal essays.

ENL 310 three credits
The Victorian Age

A study of the major English writers of non-fiction from 1832-1900, covering some prose non-fiction (Carlyle, Ruskin, Mill), but emphasizing such poets as Tennyson, Browning, Arnold, Rossetti, Swinburne, Meredith, Hopkins, and Housman.

ENL 311 three credits
The Victorian Novel

A study of the Victorian novel, both historically and generically, from Jane Austen to Thomas Hardy, including works by Austen, the Brontës, Dickens, Thackeray, George Eliot, Trollope, Meredith, and Hardy.

ENL 314 three credits
Colonial American Literature

A study of 17th- and 18th-century American literature from Captain John Smith through Benjamin Franklin with emphasis on the historical background and the various types of literature produced in the period.

ENL 315 three credits
The American Renaissance

A study of selected major writers from mid-19th-century America: Poe, Hawthorne, Melville, Emerson, Thoreau, Whitman, Fuller, and Douglass. Additional readings about the intellectual and social movements of the period are required.

ENL 316 three credits
The 19th Century American Novel

A study of American novelists from Cooper to Crane and Chopin with focus on individual novels as works of art and as examples of the development of the novel form in America in the 19th century.

ENL 317 three credits
19th Century American Poetry

A careful study of the major American poets of the 19th century from Freneau to Whitman and Dickinson.

ENL 318 three credits
Chaucer

A course designed primarily for English majors involving an intensive and critical reading of Chaucer's major writings with attention to his cultural context.

ENL 319 three credits
Shakespeare

A careful reading of Shakespeare's plays selected from the comedies, tragedies, and histories. The course explores Shakespeare's development as a dramatist, the reasons for his reputation as the greatest poet in the language, and the manner in which his plays reflect Elizabethan custom, attitudes, and beliefs. Some outside readings required in Shakespearean criticism and in the background of the period.

ENL 321 three credits
The Golden Ages of Drama

A course dealing with representative plays from the most famous and most productive eras in the history of world drama—Fifth Century B.C. Greece, the Middle Ages, the Renaissance, the age of Molière, and the realistic and romantic drama of 19th century France and Germany.

ENL 322 three credits
History of Literary Criticism

An overview of critical and aesthetic thought concentrating on the Classical tradition, the Neo-classical heritage, the English critics, Sidney through Eliot, and modern criticism through the post-structuralists.

ENL 324 three credits
Modern Literary Criticism

A general exposure to primary documents of modern critical theory leading up to and including Structuralism and Post-structuralism.

ENL 326 three credits
Irish Literary Revival

A course dealing with the development of Irish literature from the end of the 19th century through the first decades of the 20th century. Writers include Yeats, Joyce, Synge, O'Casey. The course examines the cultural, historical, and political background of Anglo-Irish relations.

ENL 330 three credits
20th Century British Fiction

A study of the 20th-century British novel, including such authors as Woolf, Joyce, Lawrence, Forster, Huxley, Cary, Spark, Lessing, and Sillitor.

ENL 332 three credits
20th Century British Drama

A study of British drama from the comedy of manners of Wilde and Shaw to the theater of the absurd of Beckett and Pinter.

ENL 333 three credits
Modern British Poetry

A study of the chief trends and the major poets and movements in modern British poetry.

ENL 335 three credits
20th Century American Fiction—1900-1945

A study of the 20th-century American novel including Fitzgerald, Hemingway, Faulkner, West, and McCullers.

ENL 336 three credits
20th Century American Fiction—1945 to the present

A study of significant fiction in America since mid-century, including Bellow, Ellison, Heller, Pynchon, LeGuin, Doctorow, Morrison, O'Brien, and others.

ENL 337 three credits
20th Century American Poetry

A study of major American poets of this century from Frost to Richard Wilbur.

ENL 338 three credits
Modern Drama

A study of modern dramatists from Ibsen, Chekhov, and Strindberg through such playwrights as Shaw, Brecht, O'Neill, Galsworthy, Eliot, Williams, Miller, Giraudoux, Albee, Pinter, and Ionesco.

ENL 339 three credits
American Drama
A study of American drama from its beginnings to the present.

Note: ENL 101 and ENL 102 are prerequisites for all upper-division English courses unless otherwise noted.

ENL 340 three credits
Literature and Psychology

An introduction to psychological interpretations of literary works, including character analysis, ethnopoetics, and the psychology of audience. The course requires reading of selected literary texts in all genres, as well as works by psychoanalytical literary critics, philosophers, and anthropologists.

ENL 341 three credits
The Writing of Advertising
Prerequisite: ENL 101, ENL 102

Reviews the semiotic theories of Saussure, Peirce, Jakobson, Barthes and others. Using theories of verbal and visual persuasion, poetic diction and bits of plot, students study techniques of attracting and convincing audiences of radio, print, poster, and television ads. Finally, students will create effective ads.

ENL 346 three credits
Wise Women

This team-taught course presents a multidisciplinary perspective of the phenomena of women and aging in American society. The experiences of older women are explored through literature, oral histories, and intergenerational class projects to determine the forces that affect quality of life and productivity in later life. Cross-listed as WMS 346.

ENL 347 (WMS 347) three credits
Special Topics in Women's Literature

Advanced study of a specialized topic chosen by the instructor.

ENL 348 three credits
American Women Playwrights

Analysis, evaluation, comparison, and appreciation of plays by 20th-century American women playwrights and insights into their themes and the images of women which they create.

ENL 349 three credits
Teaching English: Classroom Methods
Prerequisite: ENL 260

Theory and practice of teaching secondary English in its three dominant areas of reading, writing, and rhetorical analysis of literary works. Special focus will be upon how students acquire language and theoretical skills within the complex milieu of classrooms and how teachers can enhance that learning by translating sound theory into a broad range of learning activities and classroom strategies. This course is required for certification in secondary English teaching in the Commonwealth of Massachusetts.

ENL 350 three credits **W**
Report and Proposal Writing
Prerequisite: ENL 260

An advanced professional writing course focusing on methods of gathering, analyzing, organizing, and presenting data in graphic, written, and oral forms; on formatting reports and proposals; and on revising and editing for clarity and conciseness.

ENL 355 three credits
Rhetorical Theory
Prerequisite: ENL 260

A study of rhetorical traditions, focusing on major theoreticians from Aristotle to Kenneth Burke. Depending on instructor, the course will concentrate on such topics as Classical rhetoric (from 5th-century B.C. through the English Renaissance), 18th-century rhetoric (Smith, Blair, Whately, Campbell), or contemporary rhetoric (Toulmin, Burke, Richards, Perelman, Kinneavy, Searle).

ENL 356 three credits
Language and Culture
Prerequisite: ENL 260

An examination of language's pivotal role in shaping a culture's values, beliefs, biases, and world view. By reading a broad range of essays, excerpts, and articles, students will learn how language shapes thought, molds perceptions, and determines how we think about and react to various people, groups, and cultures. Students will write a series of articles for lay audiences based on what they learn during the course.

ENL 360 three credits
Advanced Thinking and Writing
Prerequisite: ENL 260

An advanced writing course emphasizing the application of the principles of argument (from ENL 260) to a variety of rhetorical situations. The course covers refinement of notions of persuasive content and logical organization in any discourse, development of a keen sense of style as outlook—of the figures of language and the range of connotation.

ENL 361 three credits **W**
Techniques of Critical Writing
Prerequisite: ENL 260

An advanced critical writing course with emphasis selected by the instructor. The course requires composition of a wide array of essays ranging from critical analyses and reviews to various types of persuasive discourses. Intensive practice in the critical or rhetorical evaluation of selected texts.

ENL 362 three credits **W**
Writing Reviews
Prerequisite: ENL 260

Fosters the ability to write effectively and to communicate the journalist's own interpretation and evaluation of art forms. Students produce reviews suitable for publication on and off campus.

ENL 363 three credits **W**
Journalism II
Prerequisite: ENL 260

An exploration of news writing and reporting in selected areas of politics, social services, social science, technology, environment, law, natural science, education, arts, media, business, and other significant media subject areas. The course concentrates on effective research, story design, and writing technique for news stories and features across these areas.

ENL 364 three credits **W**
Feature Story and Article Writing
Prerequisite: ENL 262 or ENL 363

An exploration of the problems and principles of such feature story modes as profiles, how-to articles, narrative adventures, humor, news features, investigative reporting, interpretive and analytic reporting, opinion columns, and editorials.

ENL 365
The Community and Environmental Reporting
Prerequisite: ENL 260; CHM 130, PHY 162, or BIO 112

Studying and reporting on ways in which communities see themselves and their environments, and ways in which these self-images lead to specific policies and actions. This course focuses on researching and writing and explores the rhetorical situation for the reporter and the treatment meted out to nature.

ENL 366 three credits
Creative Writing: Forms of Fiction
Prerequisite: ENL 268 or permission of instructor

Exploration of the forms of fiction and how a writer's creative choices with regard to form determine characterization, dialogue, plot, and narration. Assignments will include writing various creative pieces. Forms include, but are not limited to, the paragraph, the short short story, the short story, the novella, and the novel.

ENL 368 three credits
Writing in the World of Computers
Prerequisite: ENL 260

Problems, issues, techniques, and rhetorical strategies in such popular genres as presentation communications using PowerPoint (or equivalent software) and basic Web page authoring. Students will combine effective writing, interactivity principles, graphic design concepts, and computer-coordinated oral presentations to develop compelling and informative electronic documents.

ENL 370 three credits **W**
Women, Writing, and the Media
Prerequisite: ENL 260

Studying and writing about issues related to gender, gender-specific language, and the representation of women in various forms of media. The course focuses on discovering, exploring, researching, and writing about women's issues. Cross listed as WMS 370

ENL 371 three credits
Broadcast Journalism
Prerequisite: ENL 260

An introduction to the practice and theory of producing the news for radio and television. Students analyze programs for content, audience, format, presentation style, and technical quality and produce programs through gathering, writing, editing, announcing, engineering, and recording news for radio and television broadcasting.

ENL 372 three credits
Writing About Popular Culture
Prerequisite: ENL 260

Studying, thinking critically, and writing about popular culture and issues arising from it. This course involves exploring, researching and writing about such diverse and interconnected cultural elements as literature, politics, media, religion, science, food, fashion, sports, and the arts.

ENL 373 three credits
World Cinema I: Origin to the New Wave
Prerequisite: ENL 102

A study of the international emergence and evolution of narrative film as a major genre of story-telling, from its origins in late 19th century photographic technology through its maturation in the mid-20th century. Through a combination of readings, film-viewing, and Internet research, students study the impact of technological change on the film medium, the development of film theory and aesthetics, major historical movements like German Expressionism and Italian Neorealism, and the impact of such seminal figures as Griffith, Eisenstein, Renior, Welles, Bergman, Kurosawa, Hitchcock, and Fellini.

ENL 374 three credits
World Cinema II: New Wave to the Present
Prerequisite: ENL 102; ENL 373 recommended, not required

A continuation of ENL 373, focusing on developments in film production, theory, and criticism since 1960. As in ENL 373 course materials include readings, films, and Internet resources. Among the topics are the French New Wave and its influence on European and American film, the emergence of Third World cinemas, post-modern theory and criticism, and the work of important contemporary filmmakers like Godard, Bunuel, Fellini, Tarkovsky, Wertmuller, Wenders, Altman, Scorsese, Nair, Lee, Zhang, Campion, and Tarantino.

ENL 376 three credits
Video Production

Video production: theory, writing and techniques of video production. This course will introduce students to the scriptwriting, theoretical, and scientific readings and practical techniques of video production. Students will examine the theory and acquire training in the range of technical skills of this medium from story board to editing suite: scripting, composition, lighting, sound, camera operation, and video and audio editing.

ENL 377 three credits
Special Topics in Film and Video

Advanced and specialized studies in film (e.g., Shakespeare on Film) or in video production; topic selected by the instructor. May be repeated with change of credit.

ENL 378 three credits
Screenwriting

Seminars and Workshops

Seminars and workshops are open only to junior and senior English majors and minors. English majors in the Literature Option must take a literature seminar; English majors and minors in the Writing/Communications Option must take a writing workshop.

ENL 400 three credits
Seminar in American Literature

ENL 401 three credits
Seminar in 19th-Century American Literature

ENL 402 three credits
Seminar in 20th-Century American Literature

ENL 403 three credits
Seminar in an American Author

ENL 410 three credits
Seminar in British Literature before 17th Century

ENL 411 three credits
Seminar in 17th-Century British Literature

ENL 412 three credits
Seminar in 18th-Century British Literature

ENL 413 three credits
Seminar in 19th-Century British Literature

ENL 414 three credits
Seminar in 20th-Century British Literature

ENL 415 three credits
Seminar in a British Author

Honors Courses

ENL 421 three credits
Seminar in An American Literature Theme

ENL 422 three credits
Seminar in British Literature Theme

ENL 424 three credits
Seminar in Genre Studies

ENL 425 three credits
Seminar in Comparative Literature

ENL 429 three credits
Seminar in Critical Methods

ENL 430 three credits
Seminar in Bibliography and Research Methods

ENL 450 three credits
Advanced Poetry Workshop

ENL 451 three credits
Advanced Fiction Workshop

ENL 452 three credits
Playwriting Workshop

ENL 453 three credits **W**
Advanced Writing Workshop

ENL 454 three credits **W**
Advanced Journalism Workshop

The following courses are arranged with permission of the instructor, the department chairperson, and the dean of the college or through the procedures specified for participation in honors work.

ENL 491 three credits
Honors Study: Literature

ENL 492 three credits
Honors Thesis: Literature

ENL 493 three credits
Honors Study: Writing

ENL 494 three credits
Honors Paper: Writing

ENL 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

ENL 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Note: Undergraduates may be prohibited from taking graduate courses, or access to them may be limited. See the *Graduate Catalogue* for graduate general and program requirements.

ENL 501 three credits
Rhetorical Theory

Aristotle defined rhetoric as "the faculty of discovering all the available means of persuasion in any given situation." W. Ross Winterowd defines it as "the global art that . . . studies the manifestations of all human discourse, not just persuasion." We will study our rhetorical tradition, focusing on major theorists from Aristotle to Foucault. Depending on the instructor, the course may concentrate on such topics as Classical Rhetoric (from the fifth century B.C. through the English Renaissance), Eighteenth Century Rhetoric (Smith, Blair, Whately, Campbell), or Contemporary Rhetoric (Toulmin, Burke, Richards, Perelman, Kinneavy, Searle, Foucault, and Derrida).

ENL 502 three credits
Communication Theories

How does language shape thought? How do human beings communicate? What are the effects of mass communication? The study of communication draws from a range of disciplines including linguistics, semantics, philosophy, psycholinguistics, psychology, psychoneurology, and sociology to derive answers to how humans, as symbol makers, communicate. We will study communication models, mechanistic and transactional analogues, intra- and interpersonal systems, and systems theories. Topics will include: information processing, language as transactional process, communication models, rules of perceptual organization, communication networks, dyadic versus group and mass communication, and nonverbal and interpersonal interactions.

ENL 503 three credits
Language and Its Use

We will study the various grammars and the controversies surrounding them. Attention will be given to the history and growth of language, the artistic language of literature, and the basic vocabulary of language arts (e.g., style, rhetoric, linguistics, semantics, and technical versus artistic language).

ENL 505 three credits
Stylistics

This course explores the analytical and creative possibilities of language. Through both a theoretical discussion and practical application, we will examine how basic elements of writing, such as diction - including figurative language - syntax,

structure, and rhetorical style, express and modulate meaning in a variety of writing forms. Students will analyze, create, and critique imaginative pieces, including advertising copy, written speeches, song lyrics, technical articles, short fiction poetry, drama, and literary nonfiction.

ENL 510 three credits
Principles of Investigation, Field Research, and Validation

Emphasis will be on primary and secondary research techniques of information-gathering. Course content includes in-depth and formal interviewing techniques, use and abuse of statistical inquiry, principles of controlled studies and causation, and philosophical inquiry into empiricism and its limitations. Stress will be on both generating research and using that research in specific writing situations.

ENL 520 three credits
Law and Ethics in Professional Writing

This course gives students a grounding in the legal and ethical practices that will keep them in safe territory and allow them to make sound writing decision. Legal issues covered include freedom of the press, libel, invasion of privacy, research sources, obscenity, and copyright.

ENL 550 three credits
Independent Study

Under special circumstances, graduate students may take a maximum of two 300-400 level undergraduate courses for graduate credit. Students cannot do "independent study"; they must take a course, and they must arrange with the instructor to do more writing then required of the undergraduates. This option is not intended for students needing to make up deficiencies in order to perform at an appropriate level in graduate courses, but as an opportunity for students to explore specialized areas of interest. Before registering for this course, students must write a proposal that clearly delineates the writing projects they will undertake. The proposal then must be signed by the course instructor and approved by the director of graduate study.

ENL 600 three credits
Technical and Business Writing

This course introduces students to the many purposes, audiences, forms, and formats of technical documents and professional correspondence. They will receive practice in writing and designing a variety of documents to achieve worthwhile content, sensible organization, and readable style. Focus will be on techniques of audience-and-use analysis to adjust a message's level of technicality to the needs and background of its audience. Focus throughout is on writing as a deliberate process of deliberate decisions.

ENL 601 three credits
Report and Proposal Writing

This course is a case-approach to researching, planning, writing, and revising recommendation reports and proposals to be used by decision-makers. Students will do primary research, on-line bibliographic searches, and learn how to access government documents. They also will learn techniques for writing and designing long reports and proposals for multiple audiences.

ENL 602 three credits
Grants Writing

The course includes intensive research into funding sources, analysis and interpretation of guidelines and writing several drafts of grant proposals. This specialized rhetorical form involves analyzing complex audiences and learning persuasive techniques unique to grants writing.

ENL 603 three credits
Communicating within Organizations

This course is designed to give students an understanding of organizational communication patterns and the role communication plays in organizations. Among the topics covered are organizational theory and structure, interpersonal and group relations, nonverbal communication, communication nets, feedback, and informal and decision-making groups. Students will be required to apply theory and communication methods to various purposes and audiences.

ENL 604 three credits
Fundraising Rhetoric

Analysis of the several modes of persuasive and desriptive writing used in successful fund-raising: direct mail solicitation, major gift proposals, planned given proposals and documentation, and stewardship. Students will study the ethos of the fund-raising community through a series of actual fund-raising initiatives.

ENL 605 three credits
Persuasive Writing and Speaking

We will survey strategies from Aristotle through Madison Avenue, focusing on ethics and legality and techniques of argumentative discourse: its substance, shape, and style. Emphasis also is on avoiding logical fallacies, composing persuasive messages for clients, customers, colleagues, supervisors, subordinates, and audiences; on writing advertising copy and on giving oral presentations.

ENL 610 three credits
Rhetorical Strategies: Achieving Effective Style

The theory and practice of style as a writer's "way of seeing." By analyzing and emulating outstanding contemporary prose, we develop a style vocabulary, and we explore possible "voices" for expressive, explanatory, or persuasive writing. Reading, writing, and editing assignments focus on the enduring qualities of forceful, readable, and emphatic style clarity, conciseness, fluency, exactness, and engaging tone, among a wide array of syntactic and semantic elements that help make writing make a difference.

ENL 620 three credits
Writing Computer-User Documents

The proliferation of computers has led to the rampant growth of documentation requirements and an increased demand for writers capable of addressing various audiences with clarity and precision. In this course, we will concentrate on documentation standards and guidelines, documentation management and control and document preparation. Among the topics covered will be documentation requirements in the design, development, and life cycle of a system; forms management and design considerations; software documentation requirements, and the techniques used to prepare effective and efficient documents.

ENL 621 three credits
Editing, Layout, and Document Design

Students will learn about the in-house publishing process, with an emphasis on publications management and automation. Students will coordinate all facets of manuscript production, from automated text editing (or word processing) to automated typesetting and computer graphics. They will work with manuscripts at

all production stages: copyediting, galley and page-proof, art development, and indexing.

ENL 623 three credits
Interactive Communication

Problems, issues, and rhetorical strategies in generating effective interactive documents and software-based communicative tools. Student will author hypertext and hypermedia documents for the Internet and learn about effective non-linear writing and efficient user-friendly interface design. They will also gain experience in producing material by mixing text, graphics, video, sound, animation, and interactive components. Hardware and software limitations will be examined.

ENL 630 three credits
Teaching Writing: Theory and Practice

Analysis of contemporary composing and rhetorical theories to determine their significance for teaching writing Strategies for teaching writing will be developed. Topics range from methods for evaluating papers to collaborative learning, to cognitive processes and ways of interacting reading and writing.

ENL 631 three credits
Teaching Technical and Professional Writing

This practicum includes an eclectic survey of theories, tests, and strategies, the supervised teaching of an undergraduate course, and weekly colloquia to assess classroom practice and to share approaches. In addition, each student will complete a related research project (e.g., a comparative analysis of leading textbooks, course structures, or writing needs in local businesses).

ENL 632 three credits
Teaching Reading and Writing: Theory and Practice

Theories on reading and writing and their application to practice in both the literature and the composition classroom. The course covers current pedagogical methods and provides students with opportunities to discuss their own pedagogies and methodologies for teaching.

ENL 640 three credits
Advanced Principles in Journalism and Article Writing

This course examines the limits, techniques, and constraints of investigative journalism. Emphasis will be placed on in-depth reporting in difficult settings, handling of controversial material, and story construction of multi-source, highly complex, highly researched articles.

ENL 641 three credits
Technical and Scientific Journalism

This course examines the problems, principles, and techniques of writing effectively in science and technology for both the general public and specialized audiences. Emphasis will be on evaluating technical language and jargon; understanding the needs of various audiences; learning research techniques; and developing interview and validation strategies that help writers clarify trends, theories, patterns, and perspectives. Students will be expected to write articles about newsworthy events for scientific and technical journals.

ENL 642 three credits
Public Relations Techniques

This course offers students a comprehensive understanding of the purposes of public relations, its principles, and the techniques by which its goals are accomplished. The course covers the full range of public relations strategies used by individuals, agencies, corporations, and governments, including press releases, audio-visual presentations, public speaking, paid advertising, lobbying, fostering employee relations, and promoting citizen involvement.

ENL 643 three credits
Arts Reviewing
Prerequisite: Graduate standing in Masters in Professional Writing Program

A journalism course for potential or practicing critics/reviewers. Students will develop their ability to write effectively about and evaluate the visual, written or performing arts. The course stresses both theoretical considerations concerning ethics, rhetorical strategies and persuasive techniques directed at varied audiences (i.e. general circulation publications versus specialty arts publications, alternative press versus mainstream) and the practical preparation of reviews which meet varying editorial requirements.

ENL 645 three credits
Visual Display, Formatting, and Desktop Publishing

This course is designed to expose students to the principles of visual display in working documents so that, as editors and writers, they can work effectively with photographers and artists in the creation of finished texts. Students will explore the use of photos, headlines, graphics, and visual elements as they can be used to enhance the meaning and effectiveness of written text. Students will learn to plan visual elements in the early stages of story, computer program, or document conception. They will explore basic principles of visual design and experience the limitations and problems inherent in generating visual elements. Students will receive practical experience in dummying and layout, and will oversee several projects incorporating visual elements into written works. The purpose of the course is to train writers and editors to be sensitive and effective users of visuals designed primarily by others.

ENL 650 three credits
Topics in Professional Writing

An in-depth writing workshop focusing on various topics in professional writing. The type of writing taught during a particular semester will vary, depending on student interests, faculty research and publication, or the strengths of visiting writers. Possible topics include approaches to writing novels, short stories, screenplays, or poetry; editorial, feature, how-to environmental, and other forms of journalistic writing; freelance writing; and special topics in technical and professional writing.

ENL 660 three credits
Graduate Workshop in Creative Writing I

Fiction, poetry, playwriting, or the essay will be addressed, under the guidance of a published author. Students must demonstrate a talent for performance in one or more of the above genres - either by published works or by a reasonable body of manuscripts completed or in progress. As a class, we will discuss prototypical works, techniques, and the manuscripts of colleagues. A finished piece of work will be required of each student at approximately biweekly intervals.

ENL 661 three credits
Graduate Workshop in Creative Writing II

A continuation of ENL 660.

ENL 662 three credits
Graduate Workshop in Literary Nonfiction

This course offers students a comprehensive understanding of the principles and techniques involved in writing literary nonfiction. Students will explore how techniques of fiction are applied to experience and reality to create this modern form of American literature.

ENL 665 three credits
Practicum in Screenwriting

Students will write an original theatrical-length script or one adapted from another media.

ENL 666 three credits
Practicum in Writing for Television: The Pilot Script and the Series

This is a practicum in writing the television series, including the creation of a pilot script and related installments. Students may also elect to work in non-fiction television (e.g., training videos, documentary features and documentary serials). Series may include mini-series.

ENL 667 three credits
Documentary Writing

Documentary Writing enables students to develop and write documentary scripts for film and television, training and industrial films for business, and films for educational organizations, as well as scripts for radio. Technical, artistic, and ethical issues of visual and oral representation will be addressed through practical writing projects.

ENL 690 three credits
Composition Theory

Explores the history and principles of the relatively new discipline of composition studies. The course asks questions: What is the nature of composition studies? What is the history of the discipline? What is the relationship between rhetoric and composition, between theory and practice? What bibliographic resources aid the work of composition specialists? What role to departmental and institutional policies play in shaping/influencing the teaching of writing? How has pedagogy been influenced by recent developments in rhetorical criticism, cultural studies, feminism, literary theory, language philosophy, and technology? In addition, the course will consider the future of composition studies within the university in areas of instruction such as basic writing, English as a second language, writing across the curriculum, and hypermedia.

Internships

The purpose of the internship is to expose students to writing in professional environments. In consultation with their faculty advisor and course instructor, students will select a field site where they will work for a semester as writers, editors—or as assistants in those capacities. In special cases, students will conduct research into the writing practices at specific sites. Students will be responsible for negotiating entry into the setting and for formulating a work proposal agreeable to both their on-site supervisor and the course instructor. A contract will be drawn up describing the work, the hours, the skills the student hopes to enhance, and the student's goals. Interns will meet weekly to discuss their projects, and, in addition to the work produced, will be expected to write a final report reflecting on their experience. Students may participate in no more than one internship per semester for a maximum of three credit hours, and no more than six credit hours of internship work can be counted toward graduation.

Within these general guidelines, students may register in the following special areas:

ENL 701-702 three credits each
Internship in Technical Writing I, II

Students will work as writers, editors, or special consultants for organizations or companies producing technical documents, computer programs, or technical memos and reports. Emphasis will be placed on the quality of the student's work and on the problems of collaborating with specialists to produce work for a range of audiences.

ENL 703-704 three credits each
Internship in Journalism I, II

Students will work as writers, editors, or assistants for newspapers, magazines, radio or TV stations, news organizations, or may work in a news writing or editing capacity in public relations. Emphasis will be placed on the quality of published work produced by the student.

ENL 705-706 three credits each
Internship in Creative Writing, Scriptwriting, or Translation I, II

Students will work as writers, editors, or free-lancers for publications, publishers, agents, or under the supervision of the course instructor who will serve as project reviewer. Emphasis will be placed on the quality of writing and the process of

marketing manuscripts, scripts, and other creative works.

ENL 707-708 three credits each
Internship in Business and Professional Writing I, II

Students will work as writers, editors, assistants, or special consultants in business, industry, or nonprofit organizations. Writing might include public relations pieces, such as press releases, advertising copy or unsolicited sales letters, and house organs; background papers for managers or executives; and memos, letters, and short reports. Emphasis will be placed on the quality of work produced by the student at the field sites.

ENL 709-710 three credits each
Internship in Teaching
Prerequisites: graduate status; advanced undergraduate with permission of instructor and director

Students will work in teaching or teaching-related activities in the field of writing, including tutoring programs or writing centers in public or private schools, special summer programs. Emphasis will be placed on quality of instructional materials created by the student; programs created, updated, or redesigned; and written report of students goals, learning experience, and achievements. Teaching or graduate assistantships are not eligible for internship credit unless for an extra approved project in addition to the regular assistantship duties.

ENL 750 three credits
Thesis or Project in Professional Writing

First semester. Graded CR/F (upon approval of completed thesis or project).

ENL 751 three credits
Thesis or Project in Professional Writing

Thesis or Project in Professional Writing continued for the second semester. Graded CR/F.

ENL 657 three credits
Literature Seminar: Historical Approaches

Explores canonical and/or non-canonical literature from a historical perspective and is designed to strengthen the student's background knowledge and understanding of literature using representative literary texts as a point for departure and discussion.

ENL 659 three credits
Graduate Literature Seminar: Thematic and Cultural Approaches
Prerequisite: Graduate status or permission of instructor and director

Exploration of the study of literature in light of current thematic and cultural perspectives.

ENL 676 / FLL 676 three credits
Discourse Processes
Prerequisite: Must be a MAT student

An advanced seminar in exploration of classroom communication with a focus on the means by which language is taught and, specifically, on analyzing and recording instructional conversations involving multicultural populations.

ENL 684 / FLL 684 three credits
Literary Criticism I: Theory and Practice in Teaching Literature
Prerequisite: MAT enrollment or permission of instructor

Intensive readings with analysis of relationships among language, thought, form, and content.

Foreign Literature and Languages

The Department offers basic courses in six languages: French, German, Italian, Portuguese, Russian, and Spanish, in addition to courses in Latin, linguistics, and language methodology. Students who have demonstrated aptitude and performance in languages may elect a major in French, Portuguese, and Spanish. Minors are also offered in these languages, and in German and Russian.

In conjunction with the Boivin Center for French Language and Culture and the College of Business, the Department offers a Certificate in International Business/ French. See the chapter on Interdisciplinary Programs.

Faculty and Fields of Interest

Carlos Benavides Spanish language and literature, linguistics

Christina Makara Biron Spanish literature and language, foreign language education

Joseph A. Bronstad 20th-century German literature and culture

Lewis Kamm 19th- and 20th-century French literature

Deborah Lee 20th-century French literature

Giulio Massano (chairperson) Spanish and Italian literature of the Middle Ages, Renaissance and Baroque

Victor Mendes Portuguese language, literature, and culture

Maria Moreira-Ellen 20th-century Brazilian literature, Latin American culture

Frank Sousa Modern Portuguese literature

John H. Twomey 20th-century Spanish and Latin American literature

Mel B. Yoken 19th- and 20th-century French literature

Majors in French, Portuguese, and Spanish

BA degree

Requirements

A student who wishes to major in foreign literature and languages—French, Portuguese or Spanish—must complete a minimum of 30 credits in 300- and 400-level courses in the major field. Twenty-seven of these credits must be taken in courses taught in the language of the selected major. In French, Portuguese, and Spanish, courses 301 and 302 and six credits in "survey of literature" are required. The remaining hours will be chosen at the discretion of the student with the approval of the advisor. To qualify for any language course at the 300 level, a student must complete courses through 202, or their equivalent in that language. Students wishing to take 400-level courses must normally obtain the consent of the instructor teaching the 400-level course and have earned at least 12 credits in their major at UMass Dartmouth. A grade point average of 2.0 in courses in the chosen language must be attained for graduation.

The Department recommends that all students specializing in foreign literature and languages, especially those planning to teach or pursue a higher degree, take at least 18 hours in a second foreign language.

Minors in French, German, Portuguese, Russian, and Spanish

The minors in French, German, Portuguese, Russian and Spanish may be elected by students majoring in any other field.

Any degree candidate who has between 54 and 84 credits, with a minimum cumulative grade point average of 2.0 and a 2.5 grade point average in his or her major, may request admission to a minor in the Department of Foreign Literature and Languages. Before being admitted to the Foreign Literature and Languages minor, students must obtain permission from the Department Chairperson.

Requirements

Eighteen credits in the one language of the minor are required, and must include:

Both courses 301, 302 (or equivalent)
6 credits in 300 or 400-level courses beyond 301-302.

In order to be designated as a student who has graduated with a minor in a foreign language, the student must maintain a grade point average of 2.0 in the courses for the minor.

Practice Teaching

The Department of Foreign Literature and Languages permits students with a 3.0 cumulative average in their major to engage in the University's Teaching Intern Program. The Bureau of Teacher Preparation, Certification, and Placement requires students seeking middle and secondary certification to take LIN 322 Introduction to Second Language Acquisition, LIN 326 Discourse Perspectives in Foreign Language Education, and MLG 324 Concepts of Foreign Language Teaching, in addition to the required courses offered by the Education Department. Each semester, a list of names of qualified students will be submitted to the Department of Education. Students should see Professor Christina Makara Biron for advising.

Foreign Literature and Languages Honors Program

Senior majors in the Foreign Literature and Languages Department who have a cumulative average of 3.5 can choose to do honors work. The student must take a three- or six-credit independent study on a specific topic. This course will have an extensive reading list, and the student must present a substantial term paper which will be evaluated by a faculty committee. The term paper must earn at least a grade of A-.

French Courses

FRN 101 three credits
Elementary French I
3 hours lecture, 1 hour laboratory

Essentials of aural-oral, reading and writing usage, with intensive drilling in pronunciation, intonation and grammar.

FRN 102 three credits
Elementary French II
Prerequisite: FRN 101 or equivalent
3 hours lecture, 1 hour laboratory

Continuation of FRN 101.

FRN 201 three credits
Intermediate French I
Prerequisite: FRN 102 or equivalent
3 hours lecture, 1 hour laboratory

Review of grammar with composition and aural-oral practice. Introduction to French culture and civilization through intensive and extensive reading.

FRN 202 three credits
Intermediate French II
Prerequisite: FRN 201 or equivalent
3 hours lecture, 1 hour laboratory

Continuation of FRN 201.

FRN 203 three credits
French Literature in Translation I
Prerequisite: ENL 102

Outstanding works of French literature in translation. Readings, lectures, and discussions in English.

FRN 204 three credits
French Literature in Translation II
Prerequisite: ENL 102

Continuation of French 203.

FRN 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

Gen Ed Note: All Foreign Literature and Languages courses satisfy area **C**, Cultural and Artistic Literacy.

FRN 301 three credits
French Composition and Conversation I
Prerequisite: FRN 202 or equivalent

Oral and written reports. Practical application of grammar, vocabulary-building and introduction to style.

FRN 302 three credits
French Composition and Conversation II
Prerequisite: FRN 301

Continuation of FRN 301.

FRN 312 three credits
Culture and Civilization of France
Prerequisite: FRN 202 or equivalent

Introduction to the cultural development of the French people throughout history. Lectures, class discussions, written and oral reports on the significant aspects of French literary, social, and artistic life.

FRN 331 three credits
Masterpieces of French Literature I
Prerequisite: FRN 302 or equivalent

The representative authors, poets and dramatists of French literature from *La Chanson de Roland* through the age of Enlightenment will be read and discussed.

FRN 332 three credits
Masterpieces of French Literature II
Prerequisite: FRN 302 or equivalent

The main literary movements from the nineteenth century to the contemporary period will be analyzed. Discussion of literary genres and important aspects of French literary history.

FRN 337 three credits
Commercial French
Prerequisite: FRN 202 or equivalent

An introduction to business in France and Quebec. Topics include business vocabulary, letter writing, transportation, insurance, accounting, labor relations, economic geography.

FRN 411 three credits
La Poésie Française
Prerequisite: FRN 302 or consent of instructor

Elements of French poetry. An examination of versification, melody, rhyme, rhythm harmony, imagery, metaphor, and symbol in representative French poets from the Middle Ages to the present. The course may focus on selected topics and poets. Different instructors may emphasize different periods and works, but at least two centuries will be covered.

FRN 413 three credits
Le Théâtre Français
Prerequisite: FRN 302 or consent of instructor

Elements of French theatre. An examination of character, time, place, action, etc. in plays representative of French theatre and its evolution. The course may focus on selected playwrights, plays, topics, etc. Different instructors may emphasize different periods and works, but at least two centuries will be covered.

FRN 415 three credits
La Littérature Québécoise
Prerequisite: FRN 302 or consent of instructor

Aspects of Quebec Literature: The Novel, Theatre, and Poetry. Emphasis will be placed on the distinctive nature of the Quebec literary mind. The course may focus on a single genre or on representative authors.

FRN 417 three credits
Le Roman Français I
Prerequisite: FRN 302 or consent of instructor

Elements of the French novel. An examination of character, vision, and development of the novel focusing on representative works and authors. Different instructors may emphasize different periods and works, but at least two centuries will be covered.

FRN 418 three credits
Le Roman Français II
Prerequisite: FRN 302 or consent of instructor

Similar to FRN 417, but different authors and works will be studied. Thus offering a more complete picture of the scope and range of the French novel.

FRN 420 three credits
Major Currents of French Thought
Prerequisite: FRN 302 or consent of instructor

Examination of influential thinkers from the Renaissance to the present. Possible topics include: Montaigne, Descartes, the Philosophes, Rousseau, Existentialism, Structuralism, Barthes, Lacan and his feminist critics, Derrida, and so forth.

FRN 481 three credits
Seminar in French
Prerequisite: FRN 302 or consent of instructor

An intensive study of a specific topic, such as aural French comprehension, or a particular author or a literary movement. The topic will vary from year to year so that the course may be repeated for credit.

FRN 482 three credits
Seminar in French
Prerequisite: FRN 302 or consent of instructor

Similar to FRN 481 but with a different topic, including history of the French language.

FRN 495 three credits
Independent Study
Prerequisite: Senior standing

Intensive study or research on a special topic under the direction of a staff member. Hours to be arranged.

FRN 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Gen Ed Note: All Foreign Literature and Languages courses satisfy area **C**, Cultural and Artistic Literacy.

German Courses

GER 101 three credits
Elementary German I
3 hours lecture, 1 hour laboratory

Introductory study of the language and its grammatical structure. Development of the skills of understanding, speaking, reading, and writing.

GER 102 three credits
Elementary German II
Prerequisite: GER 101 or equivalent
3 hours lecture, 1 hour laboratory

Continuation of GER 101.

GER 103 three credits
Conversational German I

This course is parallel to GER 101, but the emphasis is on learning to understand and speak in everyday situations, particularly in connection with travel and life in Germany today. No previous knowledge of German required.

GER 104 three credits
Conversational German II
Prerequisite: GER 103 or equivalent

Continuation of GER 103 (parallel to GER 102).

GER 201 three credits
Intermediate German I
Prerequisite: GER 102 or equivalent
3 hours lecture, 1 hour laboratory

Review of grammar. Development of facility in composition and conversation. Intensive and extensive reading in texts of cultural and literary value.

GER 202 three credits
Intermediate German II
Prerequisite: GER 201 or equivalent
3 hours lecture, 1 hour laboratory

Continuation of GER 201.

GER 203 three credits
German Literature in Translation
Prerequisite: ENL 102

A survey of German literature from its beginnings through the works of Goethe and Schiller. Lectures, discussion, and reading in English.

GER 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

GER 301 three credits
German Composition and Conversation
Prerequisite: GER 202 or equivalent

Extensive oral and written application of German on the advanced level. The course will be conducted in German with emphasis on idiomatic use of the language and finer points of grammar to give the student greater confidence and accuracy in expression.

GER 311 three credits
German Culture and Civilization
Prerequisite: GER 202 or equivalent

Through reports, readings, and discussions in German, the student will learn about life in Germany, Austria, and Switzerland, both on the contemporary scene and from an historical perspective.

GER 326 three credits
History of the German Language

The historical development of German from its Indo-European origins to the present, its vocabulary, forms, and syntax particularly in their relationship to English. No previous knowledge of German required.

GER 335 three credits
German Poetry
Prerequisite: GER 202 or consent of instructor

A survey of German poetry from the ninth to the twentieth century, with analysis of changing form and content.

GER 357 three credits
German Novelle
Prerequisite: GER 202 or consent of instructor

The short prose form in its development during the nineteenth and twentieth centuries through a reading of representative authors.

GER 366 three credits
Contemporary German Literature
Prerequisite: GER 202 or equivalent

Recent developments in German literature in the Federal Republic of Germany and the German Democratic Republic, as well as in Austria and Switzerland. Material will be presented through reports, readings, and discussions in German.

GER 374 three credits
German Drama
Prerequisite: GER 202 or consent of instructor

German drama from its beginnings to the present day through a reading of representative plays.

GER 481 three credits
Seminar in German
Prerequisite: A 300-level course in German or consent of instructor

An intensive study of a specific topic, such as a particular author or literary movement. The topic will vary from year to year so that the course may be repeated with credit.

GER 495 two to four credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

GER 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Italian Courses

ITA 101 three credits
Elementary Italian I
3 hours lecture, 1 hour laboratory

Essentials of aural-oral, reading and writing usage with intensive drilling in pronunciation, intonation, and grammar.

ITA 102 three credits
Elementary Italian II
Prerequisite: ITA 101 or equivalent
3 hours lecture, 1 hour laboratory

Continuation of ITA 101.

ITA 201 three credits
Intermediate Italian I
Prerequisite: ITA 102 or equivalent
3 hours lecture, 1 hour laboratory

Review of grammar with composition and aural-oral practice. Extensive readings of cultural and literary value. Emphasis on practical application of grammar in conversations.

ITA 202 three credits
Intermediate Italian II
Prerequisite: ITA 201 or equivalent

Continuation of ITA 201.

ITA 495
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

ITA 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Latin Courses

LAT 101 three credits
Introductory Latin I

Fundamentals of the Latin laguage with selected readings, designed especially for those majoring in English or foreign languages. The course seeks to develop a measure of oral ability in the language and knowledge of the phonemics, morphology, and syntax of the declensional and conjugational systems.

LAT 102 three credits
Introductory Latin II
Prerequisite: LAT 201 or equivalent

Continuation of LAT 101.

LAT 201 three credits
Intermediate Latin I
Prerequisite: LAT 102 or equivalent

A third semester of Latin, designed to develop skill in the reading of representative authors of the Golden Age (Catullus, Cicero, Nepos, Horace, Martial, et al.), with additional selections from the Patristic Period (Vulgate) and from the Medieval Period (Isidore of Seville, the Venerable Bede).

LAT 202 three credits
Intermediate Latin II
Prerequisite: LAT 201 or equivalent

A fourth semester course paralleling LAT 201 but with more extensive selections, from Nepos, Horace and Phaedrus (Augustan Period); from the Epistolae of Pliny the Younger, mirroring Roman life, and from the Saturae of Martial; supplemented by other materials where feasible. While one purpose of LAT 201-202 will remain building ability to translate, the courses also aim to foster reading of the Latin texts directly in the original for personal enrichment and satisfaction.

LAT 495 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

Portuguese Courses

POR 101 three credits
Elementary Portuguese I
3 hours lecture, 1 hour laboratory

Essentials of aural-oral, reading and writing usage with intensive drilling in pronunciation, intonation, and grammar.

POR 102 three credits
Elementary Portuguese II
3 hours lecture, 1 hour laboratory
Prerequisite: POR 101 or equivalent

Continuation of POR 101.

POR 105 three credits
Conversational Portuguese I

An introductory course in the development of fluency in colloquial situations, particularly those relating to business, professional work, or education. Some attention to grammar. Relevant readings of cultural value.

POR 106 three credits
Conversational Portuguese II
Prerequisite: POR 105 or equivalent

Continuation of POR 105.

POR 201 three credits
Intermediate Portuguese I
3 hours lecture, 1 hour laboratory
Prerequisite: POR 102 or equivalent

Review of grammar with composition and aural-oral practice. Introduction to Portuguese and Brazilian culture and civilization through intensive and extensive reading. Three recitations and one hour of laboratory per week.

POR 202 three credits
Intermediate Portuguese II
3 hours lecture, 1 hour laboratory
Prerequisite: POR 102 or equivalent

Continuation of POR 201.

POR 204 three credits
Brazilian Literature in Translation
Prerequisite: ENL 102

Outstanding works of Brazilian literature of the nineteenth and twentieth centuries. Readings, lectures, and discussions in English.

Gen Ed Note: All Foreign Literature and Languages courses satisfy area **C**, Cultural and Artistic Literacy.
G Global Awareness

POR 205 three credits
Intermediate Conversational Portuguese I
Prerequisite: A course in elementary Portuguese or consent of instructor

Further development of fluency to deal with native speakers on everyday terms. More involved grammar. Relevant readings of cultural value.

POR 206 three credits
Intermediate Conversational Portuguese II
Prerequisite: POR 205

Continuation of POR 205.

POR 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

POR 301 three credits
Portuguese Composition and Conversation I
Prerequisite: POR 202 or equivalent

Oral and written reports on everyday events. Emphasis placed on correct syntax and style.

POR 302 three credits
Portuguese Composition and Conversation II
Prerequisite: POR 301

Continuation of POR 301.

POR 312 three credits
Culture and Civilization of Portugal
Prerequisite: POR 301 or equivalent

Introduction to the cultural development of the Portuguese people throughout history. Lectures, class discussions, written and oral reports on significant aspects of Portuguese literary, social, and artistic life.

POR 313 (ARH 313) three credits **G**
The Art of Portugal

Major developments in Portuguese art from the 12th century to the present, including painting, sculpture, ceramics, tiles, and architecture. Some of the topics to be discussed will include the Awakening of Identify; the Art of Reconquest; the Image of Empire the Rise of the Portuguese Baroque; the Romantic Consciousness; Modernism and the Escola Portuguese; Cafes, Art and Artists of the time of Fernand Pessoa; and recent Portuguese Art: Internationalism, Absorption, and Resistances. The study of contemporary art will extend to an examination of film and photography.

POR 314 three credits
Culture and Civilization of Brazil
Prerequisite: POR 301 or equivalent

The development of Brazil and its people from the colonial period to the present. Lectures, class discussions, written and oral reports on the significant aspects of Brazilian literary, social, and artistic life.

POR 325 three credits
Advanced Portuguese Grammar and Syntax
Prerequisite: POR 202 or equivalent

A study of Portuguese grammar and its usage with extensive drills.

POR 331 three credits
Masterpieces of Portuguese Literature I
Prerequisite: POR 302 or equivalent

Representative works of outstanding Portuguese authors, poets and dramatists from the Middle Ages to the classical period.

POR 332 three credits
Masterpieces of Portuguese Literature II
Prerequisite: POR 331 or equivalent

Selected works starting with the "Arcadia" movement and continuing to the contemporary period.

POR 333 three credits
Masterpieces of Brazilian Literature I
Prerequisite: POR 302 or equivalent

The major literary works from the colonial period to Romanticism.

POR 334 three credits
Masterpieces of Brazilian Literature II
Prerequisite: POR 302 or equivalent

The outstanding literary works from Realism to Modernism.

POR 337 three credits
Business Communication: English-Portuguese I

A study of the fundamentals of business correspondence in Portuguese and the translation of business-related subjects from English to Portuguese and vice-versa. Readings on the economy and finances of Brazil and Portugal will also be emphasized.

POR 338 three credits
Business Communication: English-Portuguese II

Continuation of POR 337

POR 445 three credits
The Classical Period
Prerequisites: POR 331, 332; or consent of instructor

The literary works of the great national period of Portugal. Emphasis on the classical theatre and the Lusiads.

POR 446 three credits
The Classical Period Prose and Poetry
Prerequisites: POR 331, 332; or consent of instructor

The literary works of the great national period of Portugal. Emphasis on poetry, the literature of discovery, and prose.

POR 455 three credits
Literature of the 19th and 20th Century I
Prerequisites: POR 331, 332; or consent of instructor

A study of Romanticism and Realism. The "Generation of Coimbra" is discussed, but Eça de Queiróz will be studied in POR 456.

POR 456 three credits
Literature of the 19th and 20th Century II
Prerequisites: POR 331, 332; or consent of instructor

A study of Realism with special emphasis on Eça de Queiróz and the contemporary movements.

Gen Ed Note: All Foreign Literature and Languages courses satisfy area **C**, Cultural and Artistic Literacy.

POR 481 three credits
Seminar in Portuguese
Prerequisites: POR 331, 332; or 333, 334; and consent of instructor

An intensive study of a specific topic, such as a particular author or literary movement. The topic will vary from year to year so that the course may be repeated with credit.

POR 482 three credits
Seminar in Portuguese
Prerequisites: POR 331, 332 or 333, 334 and consent of instructor

Similar to POR 481 but with a different topic.

POR 495 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Intensive study or research on a specific topic in Portuguese or Brazilian studies, under the direction of a staff member. Conditions and hours to be arranged.

POR 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Russian Courses

RUS 101 four credits
Elementary Russian I
4 hours lecture, 1 hour laboratory

A study of the fundamentals of Russian grammar together with drills in pronunciation and reading. Conversation in Russian is introduced from the beginning. Various outside readings in Russian will introduce the student to Russian and Soviet culture.

RUS 102 four credits
Elementary Russian II
Prerequisite: RUS 101 or equivalent

Continuation of RUS 101.

RUS 201 three credits
Intermediate Russian I
3 hours lecture, 1 hour laboratory
Prerequisite: RUS 102 or equivalent

This course includes a review of basic grammar and a study of more advanced syntax. Readings will serve as the basis for continued work in conversation and composition and for the study of Russian and Soviet culture. Three recitations and one hour of laboratory per week.

Spanish Courses

SPA 101 three credits
Elementary Spanish I
3 hours lecture, 1 hour laboratory

Essentials of aural-oral, reading and writing with intensive drilling on pronunciation, intonation and grammar.

SPA 102 three credits
Elementary Spanish II
3 hours lecture, 1 hour laboratory

Continuation of SPA 101.

SPA 201 three credits
Intermediate Spanish I
3 hours lecture, 1 hour laboratory
Prerequisite: SPA 102 or equivalent

Review of grammar with composition and aural-oral practice. Introduction to Hispanic Culture and civilization through intensive and extensive reading.

SPA 202 three credits
Intermediate Spanish II
Prerequisite: SPA 201 or equivalent

Continuation of SPA 201.

SPA 203 three credits
Spanish Literature in Translation
Prerequisite: ENL 102

Outstanding works of Spanish literature through the eighteenth century. Readings lectures, and discussions in English.

SPA 207 three credits
Spanish for Law Enforcement Personnel I
Prerequisite: SPA 102 or equivalent; or permission of the instructor

A course designed principally for majors and minors in criminology. In this course the emphasis will be focused on helping law enforcement personnel to deal with the Spanish speaking community. Individual case studies will be examined in depth in order to facilitate the total involvement of law enforcement personnel in their work.

SPA 208 three credits
Spanish for Law Enforcement Personnel II
Prerequisite: SPA 207

Continuation of SPA 208.

Gen Ed Note: All Foreign Literature and Languages courses satisfy area **C**, Cultural and Artistic Literacy.

SPA 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

SPA 301 three credits
Composition and Conversation I
Prerequisite: SPA 202 or equivalent

Oral and written reports. Practical application of grammar, vocabulary-building, and introduction to style.

SPA 302 three credits
Composition and Conversation II
Prerequisite: SPA 301 or equivalent, or permission of instructor

Continuation of SPA 301. Discussion and oral reports based on modern literary works, expository or journalistic prose from Spain and Latin America. Vocabulary-building and frequent compositions.

SPA 304 three credits
Advanced Composition and Conversation
Prerequisite: SPA 302 or consent of instructor

Abundant discussion and oral reports on current themes in the Hispanic world. Frequent compositions on topics found in Spanish, and Spanish-American periodicals and newspapers.

SPA 305 three credits
Business Spanish
Prerequisite: SPA 202

Spanish for correspondence, investments, law, transportation, banking, administration, personnel, publicity and promotion. Abundant practice in translation and vocabulary. Readings and selections from different fields for comprehension.

SPA 312 three credits
Culture and Civilization of Spain
Prerequisite: SPA 302 or consent of instructor

Introduction to the cultural development of the Spanish people throughout their history. Lectures, class discussions, and written and oral reports convey significant aspects of Spanish literary, social and artistic life.

SPA 314 three credits
Culture and Civilization of Latin America
Prerequisite: SPA 301 or consent of instructor

Lectures, class discussions, written and oral reports on the significant aspects of Latin American literary, social, and artistic development from the period of discovery and colonization to present times.

SPA 325 three credits
Advanced Spanish Grammar and Syntax
Prerequisite: SPA 202

A systematic study of Spanish grammar with extensive practice in composition. Recommended for those planning to teach.

SPA 331 three credits
Masterpieces of Spanish Literature I
Prerequisite: SPA 302 or consent of instructor

The representative authors, poets and dramatists of Spanish literature from El Cantar de Mio Cid in the Middle Ages to Quevedo in the Baroque period.

SPA 332 three credits
Masterpieces of Spanish Literature II
Prerequisite: SPA 302 or consent of instructor

Selected plays, novels and poetry from the eighteenth century to the contemporary period.

SPA 333 three credits
Representative Authors of Spanish American Literature I
Prerequisite: SPA 302 or consent of instructor

The main writers from the period of conquest and discovery in the New World to the development of Gaucho literature in the nineteenth century.

SPA 334 three credits
Representative Authors of Spanish American Literature II
Prerequisite: SPA 302 or consent of instructor

The major works from the pre-Modernist period in the nineteenth century to the contemporary period.

SPA 445 three credits
Spanish Poetry and Drama of the Golden Age
Prerequisites: SPA 331, 332; or consent of instructor

The poetry of the Renaissance and Baroque periods together with the selected plays of Lope de Vega, Calderon de la Barca and Tirso de Molina.

SPA 446 three credits
Spanish Prose of the Golden Age
Prerequisite: SPA 331 or consent of instructor

The main authors of the sixteenth and seventeenth centuries with emphasis on the life and major works of Miguel de Cervantes.

SPA 455 three credits
Literature of the Nineteenth Century
Prerequisites: SPA 331, 332; or consent of instructor

The main literary movements, romanticism, realism and naturalism are studied together with the representative works of outstanding authors, poets, and dramatists.

SPA 456 three credits
Contemporary Spanish Literature
Prerequisites: SPA 331, 332; or consent of instructor

The leading writers of each literary form from the generation of '98 to the present.

SPA 481 three credits
Seminar in Spanish
Prerequisites: SPA 331, 332; or SPA 333, 334; or consent of instructor

An intensive study of a specific topic or topics, such as a particular author, genre, or literary movement. The topic or topics will vary from year to year so that the course may be repeated with credit.

SPA 482 three credits
Seminar in Spanish
Prerequisites: SPA 331, 332; or SPA 333, 334; or consent of instructor

Similar to SPA 481 but with a different topic.

SPA 495 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Intensive study or research on a special topic in Spanish or Spanish American literature under the direction of a faculty member.

SPA 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

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discourse production and comprehension. An examination of methods and techniques that apply discourse theory to the foreign language classroom.

FLL 495 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

Linguistics/Teaching Methods Courses

FLL 211 three credits
Textual Analysis

Literary explication. Intensive readings with analysis of relationships between language and thought and form and content. Training in the writing of analytical critique. Course taught in English.

FLL 250 three credits **C, W**
Language and the Mind
Prerequisite: ENL 102

Examination of language and the relationships among language, thought, and culture by focusing on various human-interest aspects of linguistics. Topics include language of propaganda and politics, language of advertising, language and sexism, euphemisms, jargon, and double-talk, taboos, doctorese, legalese, bilingualism, social judgments and standard versus nonstandard English.

FLL 324 three credits
Concepts of Foreign Language Teaching

An analysis of methods and techniques in the teaching and learning of foreign languages. Examination of innovations in foreign language education. A study of the problems of language, subject matter, and materials inherent in bilingual education. Individual and group projects with application of theory to practice.

FLL 322 three credits
Introduction to Second Language Acquisition

Factors that affect the production and comprehension of foreign language acquisition, with particular emphasis on acquisition of the Romance Languages. Topics studied include comparisons of second language acquisition with first language acquisition, affective factors, interlanguage, learner strategies, sociocultural factors, and evaluation of proficiency.

FLL 326 three credits
Discourse Perspectives in Foreign Language Education

Factors that affect the understanding and production of foreign language texts. An analysis of how meaning is socially and cognitively constructed. Topics studied include the negotiation of meaning, oral vs. written texts, schema theory, ethnography of communication, genre analysis, content language instruction, and evaluation of

Graduate Courses for the Master of Arts in Teaching

FLL 522 three credits
Introduction to Second Language Acquisition
Prerequisite: Must be a graduate student

Factors that affect the production and comprehension of foreign language acquisition, with particular emphasis on acquisition of the Romance Languages. A version of the course FLL 322 with advanced content and assignments for graduate credit.

FLL 526 three credits
Discourse Perspectives in Foreign Language Education

See FLL 326.

FLL 625 three credits
Alternative Assessment and the National Standards in Foreign Language Education
Prerequisite: Must be a MAT student

A critical examination of recent theory and practice concerning the role of assessment in foreign language curricula.

FLL 676/ENL 676 three credits
Discourse Processes
Prerequisite: Must be a MAT student
An advanced seminar in exploration of classroom communication with a focus on the means by which language is taught and specifically, on analyzing and recording instructional conversations involving multicultural populations.

FLL 684/ENL 684 three credits
Literary Criticism I: Theory and Practice in Teaching Literature
Prerequisite: Must be a MAT student, or permission of instructor

Intensive readings with analysis of relationships among language, thought, form, and content.

History

History students are offered study in United States, European, Russian, Latin American, African, and Asian history. Students can expect to participate in a variety of academic activities including lecture and discussion courses and sem-inars. The history curriculum acquaints students with the variïous methods of historical study, provides them with a broad understanding of the major themes of history, allows them to con-centrate on topical courses and themes of their choosing, and offers opportunities to propose and implement their own research projects.

As a broadly based liberal arts degree, the major emphasizes the development of critical thinking and communication skills as well as the acquisition of histor-ical perspective. Our graduates prepare themselves for a wide variety of positions in government, education, and business. A B.A. in History can also lead to graduate work in a variety of fields and serve as a sound foundation for law school.

Students with a GPA of 3.2 are eligible for nomination to the University's Alpha Eta Theta Chapter of the International History Honor Society, Phi Alpha Theta.

Faculty and Fields of Interest

Ann T. Carey (Executive Assistant to the Chancellor) Germany, modern Europe

Linsun Cheng Asian history

Frederick V. Gifun Latin America, Portuguese and Brazilian Studies, European overseas expansion, comparative religion

Kevin J. Hargreaves France, European intellectual history, Canada

James A. Hijiya early America, recent U. S., Central America

Gerard M. Koot (chairperson) modern Britain, modern Europe,European economic and social history

Robert Michael modern Europe, holocaust studies

Betty L. Mitchell nineteenth-century United States, Women's history

Geraldine M. Phipps Russia, Eastern Europe

Joseph N. Scionti, Jr. Renaissance and Reformation, Italy, Germany

Benjamin F. Taggie (dean, continuing educaton) medieval studies

Len Travers
American history: colonial, early republic, and New England

Gloria Waite African, African-American history

John M. Werly 20th century U.S., urban, American religion, nativism

History Minor

Any degree candidate who has at least 54 credits with a cumulative grade point average of 2.0 and at least 2.5 grade point average in his or her major may request admission to the minor in history. This request must be approved by the Department Chairperson. Upon admission students will be assigned an advisor.

Requirements

1.
18 credits in history as follows: a) At least 9 credits of 300-400 level courses; b) At least 3 credits in or a seminar; c) No more than 6 credits at the 100 level.

2.
A student who maintains a 2.0 average in his/her history courses (for the minor) will have the successful completion of a minor in history noted on his or her transcript.

History Honors Program

The department offers an Honors Program for senior history majors with a 3.2 cumulative average. In this program students write a research paper under the direction of a faculty member of their choice. For details of this program, students should consult their advisors.

Students with a GPA of 3.2 are eligible for nomination to the university's Alpha Eta Theta Chapter of the International History Honor Society, Phi Alpha Theta.

History Major
BA degree

All history majors will be required to take 36 credits in history as indicated in requirements below. Freshmen will nor-mally not take courses above the 100 or 200 level. It is expected that each history major will consult regularly with his or her class advisor in formulating a program of study that will help to fulfill his or her educational and career goals.

Requirements		Credits
HST 101 HST 102	History of Western Civilization I *and* History of Western Civilization II	6
	OR	
HST 103 HST 104	World Civilizations I *and* World Civilizations II	
30 credit-hours of history courses, to be divided in the following manner:		
Six credits in U.S. History (above the 100 level)		6
Six credits in European History (above the 100 level)		6
Six credits in "other" history (e.g., Russia, Latin America, Asia, Near East, Africa, Ancient)		6
Three credits in a history seminar		3
Nine credits of history electives		9
	Total	**36**

No more than a total of 12 credits may be taken at the 100 level.

HST 101 three credits **C**
History of Western Civilization I

A survey of the growth of European civilization from ancient times to the end of the Middle Ages, including economic, social, political, and intellectual developments.

HST 102 three credits **C**
History of Western Civilization II

Continuation of the study of European civilization from the end of the Middle Ages to the present, emphasizing the origins and development of 20th-century societies and issues.

HST 103 three credits **C, G**
World Civilizations I

Introduces students to historical method and perspective through comparative study of human societies and cultures. The concept of "civilization" is examined in varied contexts through comparisons of social, economic, and political institutions, as well as systems of thought and religion, from pre-history to around 1400.

HST 104 three credits **C, G**
World Civilizations II

A continuation of the study of World Civilizations, from 1400 to the present.

HST 115 three credits **C, D**
History of the United States I

A survey of American history from the beginning to the Civil War. Emphasis on the interactions among people from different races, ethnic groups, sexes, classes, religions, and political persuasions.

HST 116 three credits **C, D**
History of the United States II

A continuation of the survey of American history, from the Civil War and Reconstruction to the present.

HST 160 three credits **C, G**
Slavic Civilization

Survey of the cultural, political, and economic development of Slavic peoples of Eastern Europe and Russia.

HST 180 three credits **C, G**
Asian Civilization

A survey of Asian culture, its origins in

Gen Ed Key

All History courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.
G Global Awareness
D Diversity
W Writing-Intensive Course
G Global Awareness

Chinese and Indian civilizations, and its subsequent development. Includes the historical, social, and economic development of such newly independent Asian countries as Indonesia, Malaysia, and Singapore.

HST 190 three credits **C**
African Civilizations

An introduction to the culture, history, and civilizations of the African continent, with special emphasis on sub-Saharan Africa. This one-semester survey is designed to acquaint the student with the principal themes of African history and development from prehistoric to modern times.

HST 200 three credits **C**
Topics in History (Honors)

This course will deal with a variety of topics from Russian, European, and American history. One specific topic, e.g. the Russian Revolution, will be taught in any semester.

HST 203 three credits **C**
20th Century America I

An interpretive analysis of the major American domestic and foreign policy trends from 1900 to 1945: Progressive Era, World War I, Red Scare, Roaring Twenties, Depression, New Deal, World War II.

HST 204 three credits **C**
20th Century America II

An interpretive analysis of the major American domestic and foreign policy trends from 1945 to the present: the Cold War, Fair Deal, McCarthyism, Eisenhower Years, New Frontier, Great Society, Vietnam, Counterculture, Nixon Years, the Me-Decade, the Reagan and Bush presidencies.

HST 205 three credits **C, D**
African-American History I

A survey of the role of African-Americans in American life and culture from the colonial period to the 1890s. Cross-listed as AAS 205 and LST 205.

HST 206 three credits **C, D**
African-American History II

A continuation of the study of the role of African-Americans in American history, from the 1890s to the present. Cross-listed as AAS 206 and LST 206.

HST 207 three credits **C, D**
Women's History in the United States: Colonial to the Present

Survey of the history of women—black and white, native and immigrant, rich and poor—in the U.S. from colonial times to the present. Among the topics to be discussed are: women's role in agrarian vs. industrial society; women and the family; women in the labor movement; female friendships and organizations; the frontier experience; women's suffrage; sex and sex roles; and the birth and growth of the feminist movement. Cross-listed as WMS 209.

HST 209 three credits **C, D**
History of Labor in the United States

History of the American working class throughout the 19th and 20th centuries. The course will examine the experiences of both organized labor and the masses of unorganized workers, and highlight issues of race, class, gender, and ethnicity. Cross-listed as LST 209.

HST 212 three credits **C**
The Case of Lizzie Borden

Using primary source documents such as newspapers, wills, city directories, the federal census, etc., students will study the fascinating case of Lizzie Borden of Fall River who was accused of the brutal axe murder of her father and step-mother. Students will develop their skills in historical methodology, and participation in class discussions is emphasized.

HST 213 three credits **C**
World of the Old Testament

An historical, sociological, and philosophical study of the world of the Old Testament and its effect upon the development of both Christianity and Islam. Special emphasis is placed upon recent archaeological discoveries which shed light upon the interaction of ancient Israel with surrounding cultures and its place in the context of Middle Eastern civilization. Lecture and discussion are supplemented with slide presentations and the display of various artifacts that reflect the lifestyles of the Biblical period.

HST 214 three credits **C**
The Post-Biblical World

An historical, sociological, and philosophical study of the post-Biblical world. Particular emphasis is placed upon both the origins of Christianity within the context of Jewish, Middle Eastern, and Roman history and the parallel development of Rabbinic Judaism. In addition to lecture and discussions, the class participates in a Seder Meal where the ritual practices of first-century Israel are recreated.

HST 223 three credits **C**
Medieval History

The transition of Europe during the period from the end of the Classical World to the Renaissance. Emphasis on political development, social and economic change, and the role of the Church.

HST 250 three credits **C**
Historiography

Devoted to the study of history as a means to understanding human experience and development. Acquaints the student with source materials, research methods, and problems of interpretation.

HST 260 three credits **C**
The History of the Jewish People

A survey of the social, political, and economic history of the Jewish people from the first century through the modern era. Special emphasis is placed upon Jewish-Christian and Jewish-Islamic relations and their effect upon anti-semitism, the Holocaust, and the growth and development of Zionism. The student becomes acquainted with the place of the Jewish people in the mainstream of western culture and with the problem of maintaining ethnic and religious identify in a basically hostile environment.

HST 270 three credits **C, G**
Latin American Civilizations

A comprehensive survey of the pre-Colombian and European-initiated civilizations which developed in regions of the Western Hemisphere colonized by Spain and Portugal. Emphasis is on the independent nations of Latin America from the 1820's to the present. Issues include race and class economic development and dependency, and the legitimation of political authority.

HST 282 three credits **C, G**
China and the Far East

Introduces the history and geography of China, Japan, and Korea. Emphasis on events since the establishment of relations with the West. The interrelations of the three principal Far Eastern states in modern times will be studied.

HST 283 three credits **C, G**
Chinese Civilization and Culture

General Chinese history and civilization from ancient times to the present. Emphasis on China's cultural contributions at times of both unity and disunity, and upon the characteristics of cultural change and continuity.

HST 284 three credits **C**
Japanese Civilization and Culture

A study of Japanese cultural and political development from ancient to modern times with emphasis on literature, religion and art.

HST 290 three credits **C, G**
Modern Africa

Survey of Africa's modern history, beginning especially after 1800. It looks at the beginnings and expansions of European and African-American settlements there, the Zulu and Islamic Revolutions, the conquest and colonization of Africa, and post-colonial developments.

HST 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

HST 300 three credits
Topics In American History

A critical analysis of selected topics or issues in American history which are not otherwise offered in the standard catalogue courses.

HST 301 three credits **D**
American Colonial History
Prerequisite: HST 115 or equivalent

A survey of the European colonies—especially the Spanish, English, and French—that eventually became part of the United States. Emphasis is on the confrontation of Native-American, European, and African peoples between 1492 and 1763.

HST 302 three credits **D**
History of Religion in America I

A survey of the American religious experience from the seventeenth century to the Civil War, focusing on the redefinition of European religious turmoil in the colonies, Native-American religion, the Great Awakening, eighteenth century Civil millennialism, early growth of Catholicism and Judaism, the communitarian impulse, the explosion of evangelicalism, the impact on humanitarian reform and the shaping of the African-American religious alternatives.

HST 303 three credits **D**
History of Religion in America II

A survey of the American religious experience from the Civil War to the present, focusing on the rise of Black churches, the impact of immigration and urban industrialism, the Ghost Dance religions, the Social Gospel, the Americanization of the Catholic Church, the Fundamentalist controversy, the impact of the Depression, Neo-Orthodoxy, the public religion of the Cold War, Pan-Indianism, twentieth century Judaism, the flowering of the cults, and the emergence of the electronic churches.

HST 304 three credits **D**
History of North American Indians
Prerequisites: HST 115 or 116 or SOC/ANT 204 or permission of the instructor

Survey of the history of Indians of North America from their origins to the present. The course will examine a variety of native peoples in different regions of the continent, but mostly in what is now the United States, and the interaction between those native peoples and newcomers from Europe and Africa.

HST 305 three credits **D**
The United States in the Age of Revolution
Prerequisite: HST 115 or HST 301, or equivalent

A study of the period from 1760s to the 1840s, concentrating on the development of political ideas and practices. Topics will include the Revolution, its origins and consequences; the Constitution; the rise of political parties; Jeffersonian and Jacksonian democracy; and territorial expansion.

HST 306 three credits **D**
Civil War and Reconstruction

The antebellum, Civil War, and Reconstruction period of American history. This was a crucial era because so many fundamental issues were at stake: the place of African-Americans in American society; the destiny of Southern whites who tried to save their slave regime by seceding from the Union; and, the very survival of the United States as a nation.

HST 309 three credits
The History of Business in America

The development of American business and industry from the age of the colonial merchants, through the emergence of large scale industry in the nineteenth century into the modern era. It is primarily a business history course, focusing upon various industries and their development.

HST 310 three credits **D**
America's Working Women

The experience of American working women—black and white, native and immigrant, organized and unorganized—from the colonial period to the present day. Because work is defined as productive labor, this course will examine women as paid and unpaid workers—in the marketplace as well as in the home. Some of the areas of study will be women on the frontier, women in the mills and factories, labor union women, women in the professions, and the history and politics of housework. Cross-listed as WMS 310.

HST 311 three credits
New England Maritime History

The relationship between New England and the sea. This course is more local in its approach than the American Maritime History course, and treats coastal and foreign trade of individual ports, whaling, fishing, and recreational industries. The decline of maritime New England is also treated, bringing the course into the most recent decades.

HST 312 three credits
American Maritime History

The development of the American merchant shipping industry since colonial times, and its role in American political, economic, and cultural history.

HST 313 three credits
Territorial Expansion of the United States

Examines the geographic, economic, social, and diplomatic issues involved in the settlement and development of the nation from the earliest European outposts to the passing of the frontier and the shift to overseas territories. In tracing the internal expansion of the United States, attention will be focused upon the exclusion of the native Americans from the mainstream of American life.

HST 314 three credits **D**
History of Urban America

The emergence and development of the American city from the seventeenth century to the present, stressing the colonial town, cities and the new nation, immigration and the nativist reaction, slavery in the city, the completion of the urban network, the political machine, the urban reformer, the company town, the African-American migration to the city and the emergence of the metropolis.

HST 315 three credits
History of Massachusetts

The development of the state from its Colonial beginnings, through its transformation into an industrial society during the nineteenth century and its twentieth century adaptation to industrial and technological changes. This will not be simply a political history but will include geography, industrial history, social and transportational as well as immigration studies. There will be a discussion of the broadest variety of topics possible.

HST 317 three credits **G**
History of European Women

A survey of women's history from the Renaissance to the present that critically examines the recent scholarship on this topic. The course will deal both with remarkable and ordinary women. Extensive use will be made of recent research on the history of the family and social demography as well as the more traditional areas of political, intellectual, and economic history. While emphasizing Western Europe, the course will include some material from the Americas and other areas. Cross-listed as WMS 317.

HST 318 three credits
Women's Biography and Autobiography

Examines the lives of various women in the United States, Great Britain, and elsewhere both from a literary and historical perspective. Examples of women whose lives will be studied are Charlotte Bronte, Sarah and Angelina Grimke, and Charlotte Perkins Gilman. Cross-listed as WMS 318.

HST 319 three credits
Early Modern Europe 1600 to 1815

A survey of post-Renaissance European civilization to the 19th century. Emphasis on the growth of the modern state system, the origins of capitalist economies, the scientific revolution and Enlightenment, and the political history of the principal monarchies.

HST 321 three credits **G**
17th and 18th Century Europe: An Intellectual History

A survey of the intellectual history of Europe in the early modern period, including the growth of skepticism and the secularization of thought, the scientific revolution, the Enlightenment and the creation of a liberal climate of opinion, and the origins of modern political and economic theory.

HST 322 three credits
19th and 20th Century Europe: An Intellectual History

An examination of such intellectual currents as romanticism, liberalism and conservatism, nationalism, socialism and capitalism, and social Darwinism. Attention will be paid to the development and maturation of these currents in the 19th century, and their modification in the 20th century.

HST 323 three credits **G**
Europe in the 19th Century

The major political, economic, intellectual and social developments in Europe from the defeat of Napoleon to the out-break of World War I.

HST 324 three credits **G**
Europe in the 20th Century

A study of the forces shaping contemporary Europe. Attention will be paid to World War I and its impact, the Versailles settlement, liberalism and democracy in the 20th century, the challenge of totalitarian systems, the Second World War, the Cold War, the West European unification, and disintegration of the Eastern Bloc.

HST 325 three credits **G**
European Overseas Expansion 1500 to 1800

Examines European mastery of the oceans from the beginning of long-distance trade with Africa to colonization and empire-building in Asia and the Americas. Emphasis on the pioneering activities of Portugal and the competing interests of Spain, the Netherlands, France, and England.

HST 327 three credits
Topics in the History of Ideas

Treats the history of ideas as an interdisciplinary approach to both intellectual history and the history of European society. Topics will vary with the instructor.

HST 329 three credits **G**
European Economic History

An analysis of economic growth, economic policy and social change in Europe from the medieval period to the present, including a discussion of the contemporary European economy.

HST 331 three credits **G**
The Renaissance

A survey of political, economic, and cultural developments in Europe from 1300 to 1500 with special emphasis on Italy.

HST 332 three credits **G**
The Reformation

A survey of the background of the Reformation, the religious changes of the period, the role of reformers such as Luther, Calvin and Zwingli, and the effects of reform between 1500 and 1648.

HST 333 three credits
History of the British Isles to 1660

A social, cultural, economic, and political survey of the history of the British Isles from the earliest times to the mid 17th century. Emphasis will be given to such topics as Celtic, Roman and medieval Britain; the development of English, Scottish, Irish and Welsh identifies; the creation of medieval kingdoms; the Reformation; the Tudor and Stuart states; the development of Parliaments; the British civil wars and the conquest of Ireland.

HST 334 three credits **G**
History of the British Isles from 1660

A social, cultural, economics and political survey of the history of the British Isles from the mid 17th century to the present. Emphasis will be given to such topics as the relationships between the English, Scottish, Irish and Welsh peoples; the expansion and decline of the British Empire; the development of constitutional government and the coming of democracy; industrialization, the creation of a middle class and a working class consciousness; the history of women; the development of English, Irish and Scottish nationalism; British participation in two world wars; and contemporary issues.

HST 335 three credits
19th Victorian Britain

An examination of the social, political, intellectual, and economic transformation of Britain in the 19th century. Emphasis on social analysis of Victorian England, the evolution of the 19th century Empire, and the impact of empire upon internal developments.

HST 337 three credits
English Constitutional History
Prerequisites: HST 333, 334.

A survey of the legal and constitutional development of England from the Anglo-Saxon settlement to the Reform Bill of 1832. Attention to documents and other contemporary materials (in English). Recommended for pre-law students.

HST 339 three credits **G**
Canada to 1867
3 hours lecture
Prerequisites: Sophomores and above; HST 102, or HST 115, or equivalent

Survey of Canadian history from European contact to the year of confederation. Lectures and readings integrate themes in the political, social, economic and military history of native, French, and British populations, with emphasis on the development of the early maritimes and Quebec.

HST 340 three credits **G**
Canada Since 1867

Extending the survey of Canadian history from Confederation to the present, this course focuses on the political history of post-colonial Canada, with social, economic and cultural issues introduced to illuminate the problem of nation-building for a population divided by regional and ethnic differences. Special attention will be paid to Quebec and the Maritimes, native-Canadians, U.S. relations, and contemporary constitutional issues. HST 339 is recommended, but not required as a prerequisite.

HST 341 three credits **G**
France to 1789

A survey of French history in the 17th and 18th centuries. Topics include the rise of the Bourbon monarchy, the reign of Louis XIV, the growth of religious and political dissent, the struggle for European hegemony and overseas empire, the cultural influence of France in the Enlightenment, and the crisis of the old regime.

HST 343 three credits **G**
History of Greek Civilization

An introduction to the history of Greek civilization, from Minoan and Mycenaean times to the Hellenistic period. Emphasis will be on cultural and intellectual developments in their social and political contexts.

HST 344 three credits **G**
History of Roman Civilization

A survey of Roman civilization from the origins of Rome to the age of Constantine, emphasizing Roman social and political institutions. RElated topics include Roman imperialism, Latin literature, Roman religion, and early Christianity. Readings include a variety of primary sources.

HST 347 three credits **G**
History of Italy in the 19th Century

A detailed study of the Risorgimento, or movement for Italian unification. Attention will be given to economic and cultural life as well as political events.

HST 348 three credits **G**
History of Italy in the 20th Century

An analysis of the rise and fall of Italian fascism, including a study of Italy's participation in both World Wars.

HST 351 three credits **G**
History of Germany to 1786

A study of the development of the Germanic states from the founding of the First Reich in the 10th century to the death of Frederick the Great. Topics to be considered include: the development and nature of the medieval empire, the conflict with the Papacy; the Reformation; the Counter-Reformation; the spread of absolutism; the development of Prussia; and the role of the Hapsburgs in German affairs.

HST 352 three credits **G**
History of Germany from 1786 to the Present

A history of Germany in the modern era with the emphasis on politics and culture. Detailed treatment of 19th century unification and the rise and fall of Fascism.

HST 353 three credits
History of Germany from 1890 to 1933

A study of Germany from the dismissal of Bismarck to the appointment of Hitler incorporating political, social, and intellectual history. Topics to be considered in depth include: the nature of the Second Reich under William II; the growth of anti-Semitism; World War I; the revolution of 1918; and the development and collapse of the Weimar Republic.

HST 354 three credits
History of Germany from 1933 to the Present

A study of Germany from Hitler to the present day. Topics to be considered in depth include: the career and personality of Hitler; the growth of the Nazi Movement; the nature of the Nazi state; the origins of World War II; Germany's post-war recovery; and the government, society and roles of the (West) German Federal Republic and the (East) German Democratic Republic, and reunification.

HST 355 three credits **E, G**
Anti-Semitism and Its Ethical Issues

Explores the issues of moral choice and ethical responsibility inherent in the history of the Jews in Biblical times, the patristic period, Middle Ages, Reformation, Enlightenment, French Revolution, nineteenth-century Europe and the United States, the Holocaust, up to the present day.

HST 356 three credits **G**
The Holocaust

An examination of the Holocaust, including the psychosocial aspects of prejudice; the history of Jew hatred from Biblical times; the historical, political, racist, economic, social, psychological, literary, legal, theological, and moral aspects of the Holocaust. Cross-listed as JST 356.

HST 361 three credits **G**
Russia to 1855

Survey of Russia from the 9th Century to 1855. Stress will be given to political, social, and economic developments.

HST 362 three credits **G**
Russia in Reform and Revolt, 1855 to 1918

Survey of Russia from 1855 to 1918. Emphasis will be on the great reforms, political and economic changes, the rise of revolutionary movements, the Revolution of 1905, and the Revolution of 1917.

HST 363 three credits **G**
History of the Soviet Union

Study of Russia from 1918 to the present. Stress will be given to the establishment of the Communist government, the Five Year Plans, and the social and cultural changes resulting from the adoption of Soviet ideology. Attention will be given to the role of Russia in the modern world.

HST 364 three credits **G**
Social and Cultural History of Russia

Topics pertaining to social classes, the development of serfdom, religion, and art and literature in Russia from the 9th Century to the present.

HST 365 three credits **G**
Eastern European History

The study of the Eastern European bloc from the Middle Ages to the present. Emphasis will be given to the political and economic development of these countries and the establishments of Communism in the post-World War II period.

HST 366 three credits **G**
Topics in the History of Soviet Foreign Policy

Topics relating to the principles underlying Soviet foreign policy and to different countries and areas where the Soviet government has conducted foreign policy: for example, the United States, Western Europe, the Third World, China. Not every topic will be taught each time the course is given.

HST 371 three credits **G**
History of Portugal

A survey from the Roman era to the present with emphasis on the post-medieval period. Topics include the emergence of a unified state, dynastic rivalries, the economy, overseas expansion and empire, constitutional development, the "New State" of Salazar, the revolution of 1974, and post-revolutionary Portugal.

HST 372 three credits **G**
Latin American-United States Relations

Surveys the long history of contacts between Anglo and Latin America, with fullest emphasis on the era of the national states and the evolution of the inter-American system. Economic, cultural, and political aspects of the relationship will be studied, up to the present.

HST 376 three credits **G**
History of Brazil

Emphasis on the period since independence in 1822. Topics include the empire and slavery, coffee, European immigration, the republic, race and class, foreign economic and ideological influences, and Brazil in the 1980s.

HST 378 three credits
Slavery in the New World

The trans-Atlantic slave trade and slavery in the Americas from the sixteenth to the nineteenth century. Emphasis on the beginning and development of the trans-Atlantic slave trade; moral issues, economics, and tactics of the trade; and comparisons of the slave societies of Brazil, the Caribbean, and the United States.

HST 381 three credits **G**
Modern Japan

A survey of modern Japan since the 19th Century, with emphasis on post-war Japanese politics and Japan's present role in world affairs.

HST 382 three credits **G**
Modern China

A study of the major themes of modern Chinese history, including culturalism and nationalism, responses to the impact of the West, and the development of revolutionary ideology.

HST 385 three credits
History of the People's Republic of China

A study of the world's most populous country. Covers the rise and fall of Nationalist China, the establishment of the People's Republic, social transformation, economic policy, bureaucracy, and freedom, Mao's ideology, the people's communes, the cultural revolution, the new leadership, and the new U.S./China relationship.

HST 391 three credits
Topics in African History
Prerequisites: HST 190 or HST 290 or written permission of the instructor

Advanced-level course for students with a background in African history. Topics vary from year to year. Research papers are required. Cross-listed as AAS 391, LST 391.

HST 395 three credits **G, W**
World Religions and Spirituality

Comparative and historical perspectives on world religions and humanity's search for meaning. Focuses on various cultural responses to "ultimate concerns" about the purpose of existence, creation, the supernatural, eternity, soul or spirit, death, suffering, good and evil, enlightenment, and salvation. Encompasses varied forms of religion and spiritual expression from highly structured and defined systems to folkways and mysticism.

HST 399 three credits
Teaching History and Social Studies in Middle and Secondary Schools
Prerequisites: EDU 207, 327

Examines the major genres, philosophies, and reference tools for the teaching of history and social studies in middle and high schools. All students will collect material, including documents and audio-visuals, for a topic to be taught in the schools.

Courses for the Master of Arts in Teaching

Complete course descriptions are available in the *Graduate Catalogue*.

HST 400-494 three credits
Seminars in History

Seminars will be offered variously in such fields as United States history, European history, English history, Russian history, Latin American history, Asian history, history of ideas, and the history of women. The writing of a substantial paper will be required. Content will vary with instructor.

Recent offerings include:

HST 406 three credits
Seminar: Civil War Biography

HST 422 three credits
Seminar: U.S. Women's History

HST 450 three credits
Seminar: Historiography

HST 462 three credits **G**
Seminar: Russian Revolutionary Thought

HST 463 three credits **G**
Seminar: Russian Dissent

HST 466 three credits **G**
Seminar: Gorbachev

HST 470 three credits **G, W**
Seminar: Latin America

HST 49S variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

HST 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

HST 499 six credits
Honors Seminar

The writing of an honors research paper. Students may elect to take three credits one semester and three in another.

HST S01 three credits
Theory and Practice of Teaching History and Social Studies

The historical and contemporary debate on the nature of the history and social studies curriculum in secondary schools.

HST S11 three credits
Teaching American History
Prerequisite: Graduate student status or special permission of instructor

Seminar examining current trends and issues in the study of American history.

HST S12 three credits
Teaching European History

The content and methodology of European history courses in secondary schools.

HST 513 three credits
Teaching World History

The content and methodology of world history courses in secondary schools.

HST 521 three credits
Graduate Seminar in History

Graduate Seminars in history are designed to allow participants to pursue reading and research on a particular historical topic.

Humanities/Social Sciences

Humanities/Social Sciences Major
BA degree

Program Director, Frederick V. Gifun,
Professor of History

The Bachelor of Arts in Humanities/Social Sciences offers students the opportunity to broaden their understanding of the scope of human civilizations of the past and present and to develop their ability to think and write critically, all in the classical tradition of the liberal arts. The program prepares the student for a wide variety of careers in human services, the professions, and the corporate world. Given its broad academic scope, it provides a foundation for career changes and retraining when necessary.

Due to the interdisciplinary nature of the Humanities/Social Sciences major, students must work closely with their faculty advisor in selecting courses and constructing a coherent academic program. The student is urged to organize a minor or topical concentration of courses within the disciplines of the major. Possibilities include social service, comparative politics, political journalism, public administration, the writing option in English, the International Marketing Certificate in French, and so forth. The student could also pursue an option already formulated in the following areas: Women's Studies, Religious Studies, African American Studies, and Business and Labor.

Students are encouraged to declare the Humanities/Social Sciences major as soon as possible in their academic career, at which time they should submit to their faculty advisor a written rationale and proposed program of study. This major is not available to entering freshmen.

Of the 120 credits required by the university for graduation, at least 30 course credits must be completed in advanced and specialized courses (300-level or above) at or under the sponsorship of UMass Dartmouth. No course may be used to fulfill more than one requirement. For example, the same Sociology course cannot be used to meet both the Social Science distribution requirement and the requirements for the Humanities/Social Sciences major.

Requirements

The major consists of 36 credits of Humanities/Social Sciences courses, at least 24 credits of which must be at the 300-level or above. The remaining 12 credits must be at least at the 200-level. Within the 36 credits, the following stipulations must be met:

1.
At least two areas must be selected in the Humanities and at least two areas must be selected in the Social Sciences.

2.
A minimum of 12 credits, including a 400-level course, must be taken in one of the areas selected.

3.
At least 6 credits must be taken in each of the other three areas selected.

4.
The remaining 6 credits of the major may be taken in any of the ten Humanities/Social Sciences disciplines.

Humanities
English
Foreign Literature and Languages
History
Philosophy
Art History
Music (non-applied courses)

Social Sciences
Economics
Political Science
Psychology
Sociology/Anthropology

Some courses listed in the Interdisciplinary Minors section of the catalog (starts on page 353) may also meet these Humanities and Social Sciences distribution requirements. Please consult the Humanities/Social Sciences Program Director.

Mathematics

Mathematics can be pursued as a scholarly discipline of an especially elegant kind—a creative art form—or it can be treated as a valuable tool in an applied discipline.

The program for mathematics majors is designed to provide a solid foundation in the theoretical and applied aspects of mathematics necessary for a variety of professional careers. The flexibility within the third and fourth years was established to enable mathematics majors to concentrate in areas of their interest. The Computer-Oriented Mathematics Program (COMP) is designed for those seeking positions in industry or with the government. The program emphasizes applied and computer mathematics. Students can choose their curricula so as to emphasize that role of mathematics which will be useful to them in later years. For example, students may use our offerings as preparation for

- secondary school teaching;
- graduate school in mathematics, applied mathematics, or computer science;
- a career in applied mathematics in either the public or private sector; and
- graduate school in an area that uses mathematics, such as economics, biology or psychology.

Some mathematics majors have had success in law school, pharmaceutical school, and medical school.

The Department offers both a major and a minor program.

Faculty and Fields of Interest

Louis G. Bianco probability, statistics

Nurit Budinsky nonlinear differential equations, numerical analysis, nonlinear dynamical systems

Richard Faulkenberry linear algebra

Dana Fine applied math, relativity theory

Sigel Gottleib applied mathematics, scientific computing, parallel computing

Iwona Grzegorczyk algebraic geometry, mathematics education

Adam O. Hausknecht algebra, analysis of algorithms

James J. Kaput algebra, math education and the philosophy of mathematics

Anthony J. Kearsley scientific computing

Saeja Oh Kim modern algebra

Robert E. Kowalczyk probability, numerical analysis, computer applications

Richard Lesh math education

Steven J. Leon numerical analysis, linear algebra

Gary Martin logic

Robert McCabe analysis

Ronald Tannenwald (chairperson) dynamical systems

Mathematics Major
BA degree

At the end of the sophomore year, students, aided by their faculty advisors, should plan a course of study for the completion of the college program.

The advanced courses selected during the third and fourth years should be consistent with the students' interests and goals.

Students must earn a grade of C- or higher in all mathematics courses taken at the 200 or higher level in all undergraduate mathematics degree programs.

Mathematics Major
BS degree

Students may elect to earn a Bachelor of Science degree provided that they complete the requirements for the BA degree and also take an additional six credits of Natural Science (but only courses that the science departments themselves would credit to a major in their areas). The humanities/social science requirements for the BS degree are a combined total of eighteen credits. At least six must be taken from each area.

Mathematics Major: Computer-Oriented Mathematics Option

BS degree

In order to meet the needs of our present-day computer-oriented society, the Mathematics Department presently offers an alternative to the mathematics major program of study—a computer-oriented mathematics program leading to the BS degree in Mathematics. This program requires a core of computer science courses and emphasizes the applied mathematics areas more than the mathematics program. This program allows the student a large choice of electives within the context of computer-oriented mathematics. The student can thus pursue his or her special interests in any particular phase of computer-oriented mathematics.

The program has virtually the same freshman and sophomore years as the other programs in mathematics, computer and information science, computer engineering and electrical engineering. This allows a student to find his or her interests and make a final choice from among these before the end of the second year without any loss of time.

A BS degree in Mathematics (COMP) allows the student to enter graduate programs that specialize in computer-oriented mathematics or enter industrial employment where physical and industrial problems are analyzed mathematically.

The program offers a large choice of electives within the context of computer-oriented mathematics. The student can thus pursue his or her special interests in any particular phase of computer-oriented mathematics.

Requirements		Semester Credits	
		First	**Second**
First Year			
MTH 111, 112	Analytic Geometry and Calculus I & II	4	4
CIS 261	Computer Programming Fortran	3	
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Humanities, Social Science or Free Electives	3	6
MTH 181, 182	Discrete Structures	3	3
		16	**16**
Second Year			
MTH 211	Analytic Geometry and Calculus III	4	
MTH 212	Differential Equations		3
MTH 221	Linear Algebra	3	
PHY 113, 114	Classical Physics	4	4
	Literature	3	3
	Humanities, Social Science or Free Electives	3	6
		17	**16**
Third Year			
MTH 311	Advanced Calculus I	3	
MTH 312	Advanced Calculus II		3
	Mathematics Electives	3	3
	Humanities or Social Sciences	3	3
	Unspecified Electives	6	6
		15	**15**
Fourth Year			
MTH 441	Modern Algebra	3	
	Mathematics Electives	3	3
	Humanities or Social Science	3	3
	Unspecified Electives	4	6
		13	**12**
	Total credits:		**120**

Mathematics Electives		code*
MTH 302	Theory of Numbers	T
MTH 310	Modern Methods in Mathematics Teaching	T
MTH 311, 312	Advanced Calculus I, II	T, G, A
MTH 321, 322	Topics in Applied Math I, II	A, G
MTH 331	Probability	A, G
MTH 332	Mathematical Statistics	A, G
MTH 353	Applied Linear Algebra	A
MTH 361, 362	Numerical Analysis I, II	A, G
MTH 381	Combinatorial Theory	A, G
MTH 382	Graph Theory	A,G
MTH 421	Complex Variables	A, G
MTH 441, 442	Modern Algebra I, II	A, G
MTH 443	Applied Modern Algebra	A, G
MTH 451	Differential Geometry	G
MTH 452	Higher Geometry	G, T
MTH 461	Elementary Topology	G
MTH 463	Math Models	A
MTH 487	Math Inquiry I	T, G
MTH 488	Math Inquiry II	T, G
MTH 499	Selected Topics in Math	T, G

*** Code**

T—recommended for students preparing to teach
G—recommended for students preparing for graduate school
A—recommended for students in applied mathematics

Requirements

		Semester Credits	
		First	**Second**
First Year			
MTH 111, 112	Analytical Geometry and Calculus I, II	4	4
CIS 111	Computer Programming	3	
CIS 211	Introduction to Program Design and Data Structures		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Humanities/Social Science Electives	3	3
MTH 181, 182	Discrete Structures I, II	3	3
		16	**16**
Second Year			
CIS 260	Computer Programming—FORTRAN	1	
MTH 211	Analytical Geometry and Calculus III	4	
MTH 212	Differential Equations		3
CIS 212	Introduction to File Processing	3	
PHY 113, 114	Classical Physics I, II	4	4
	Humanities/Social Science Electives	3	6
MTH 221	Linear Algebra		3
		15	**16**
Third Year			
MTH 321, 322	Topics in Applied Math I, II	3	3
MTH 331	Probability	3	
MTH 332	Mathematical Statistics		3
	Science Electives*	3	3
	Free Electives	3	3
	Literature	3	3
		15	**15**
Fourth Year			
MTH 361, 362	Numerical Analysis I, II	3	3
	Humanities/Social Science Elective	3	
	Technical Electives**	3	3
	Free Electives	6	4
MTH 353	Applied Linear Algebra		3
		15	**13**
	Total credits:		**121**

*
The Science Elective is defined as any course in Biology, Chemistry, Physics, or Medical Laboratory Science which is accepted for credit by majors in those programs.

**
The Technical Elective is defined as any upper-division Mathematics or Computer and Information Science course.

Mathematics Minor
BA Degree

The minor in mathematics comprises a central core of required courses followed by opportunities for advanced work and some specialization. Any student of the university is eligible for the designation "Minor in Mathematics" upon completion of the following requirements. Each course for the minor must be completed with a grade of C- or better, and the student must maintain at least a C average (2.0 GPA) in the minor program.

Requirements

		Credits
MTH 111	Analytic Geometry and Calculus I	4
MTH 112	Analytic Geometry and Calculus II	4
MTH 211	Analytic Geometry and Calculus III	4

At least one of the following courses:

MTH 212	Differential Equations	3
MTH 221	Linear Algebra	
MTH 227	Linear Algebra for Applied Science	

At least three additional three-credit courses,numbered 300 or higher.	9
Total	**24**

MTH 100 three administrative credits *
Basic Algebra

An introductory level algebra course intended primarily for those with weak or no skills or those who have been away from the subject for some time. This course provides the algebra background required for all entry level courses in mathematics.

MTH 101 three credits **M**
Elements of College Mathematics I

MTH 101, 102 comprise a terminal course of study for students whose curriculum calls for one year of mathematics. MTH 101 is also a prerequisite for MTH 231. The first semester covers selected topics from algebra, set theory, matrix algebra, and elementary functions.

MTH 102 three credits **M**
Elements of College Mathematics II
Prerequisite: MTH 101 or MTH 103

Introduction to differential and integral calculus.

MTH 103 three credits **M**
Finite Mathematics

Will cover selected topics from Logic, Set Theory, Vectors and Matrices, Linear Programming, Probability, Graphs and Theory of Games. May be taken in lieu of MTH 101.

MTH 104 three credits **M**
Fundamentals of Statistics

The mathematical techniques involved in organizing data, averages and variation, elementary probability theory, the binomial distribution, normal distributions and related topics, estimation, hypothesis testing, regression and correlation, Chi Square- tests of independence, Chi Square- goodness of fit and analysis of variance: comparing several sample means.

MTH 105 three credits
Technical Calculus I

First semester of a four-term calculus sequence required of technology students and recommended for non-physical science majors desiring a basic introduction to analysis. The first term will review those topics from algebra and trigonometry needed in the sequel. Then the basic concepts of the differential calculus will be studied.

MTH 106 three credits
Technical Calculus II
Prerequisite: MTH 105

Continuation of MTH 105. Further study of algebraic and transcendental functions of one variable and topics from the integral calculus of these functions.

MTH 107 three credits **M**
Elements of College Mathematics Enhanced

Elements of college mathematics in application to business, selected to emphasize interpretation and explanation and to de-emphasize computation.

MTH 108 three credits **M**
Modern Math for Elementary Teachers

Problems of the changing modern mathematics curriculum. Current issues, attitudes, and learning theories will be studied, including the mathematical foundations of the elementary school curriculum.

MTH 109 two credits
Mathematical Problem Solving and Reasoning I

Basic mathematical problem solving and reasoning skills development. The course uses an intensive hands-on, problem-centered approach to develop mathematical thinking skills, frequently using computer software and group work. The course begins with simple thinking skills and mathematical ideas, and "what to do when you're stuck" strategies. The goal is to develop strategies for solving hard problems and understanding complex or abstract ideas.

MTH 110 three credits **M**
Mathematical Problem Solving and Reasoning II

Continuation of MTH 109.

MTH 111 four credits
Analytic Geometry and Calculus I
Prerequisite: Trigonometry

First semester of a four term sequence required of majors in mathematics, the physical sciences and engineering. Recommended for others desiring a thorough background in elementary analysis. Term 1 will cover topics in analytic geometry, the concepts of function and limit, continuity, differentiability and integrability of elementary algebraic and transcendental functions. Techniques of differentiation and applications will then be studied.

MTH 112 four credits
Analytic Geometry and Calculus II
Prerequisite: MTH 111

Continuation of MTH 111. Topics from the integral calculus, stressing techniques of integration (including numerical methods). Infinite series.

MTH 113 four credits
Calculus for Applied Science and Engineering I
Prerequisite: Trigonometry
Co-requisites: Phy 111, EGR 107

Functions, limits, differentiation and integration of elementary algebraic and transcendental functions. Vectors, vector operations, vector fields and line integrals will be introduced. Technological tools an a computer algebra system will be used extensively throughout the course.

MTH 114 four credits
Calculus for Applied Science and Engineering II
Prerequisite: MTH 113 or MTH 111
Co-requisites: Phy 112, EGR 108

Continuation of MTH 113 or MTH 111. Techniques of integration, improper integrals, applications of integrals, series, polar coordinates and an introduction to differential equations. Selected topics from multivariable calculus will include partial differentiation, double and triple integrals, line integrals and flux.

MTH 117 three credits **M**
Fractals and Chaos via Elementary Mathematics
Prerequisite: Above average score on the MTH 101 placement test

The new science of chaos revealed through its fascinating history and stimulating examples. The connection will be demonstrated between such seemingly unrelated topics as weather and stock prediction, management and scientific decisions, the erratic motion of a pendulum and the

* Administrative credits do not count towards the total credits required for graduation.

Gen Ed note: Mathematics courses satisfy the Mathematics requirement. Those marked **M** below are appropriate for non-science/engineering majors.

delicate design of snowflakes, clouds, or the fjords of Sweden. Students will create their own fractals and play the chaos game using computer software, calculators, or even just pencil and paper.

MTH 118 three credits **M**
Mathematics for Artists
Prerequisite: satisfactory score on mathematics placement exam

Relationships between fine art and mathematics, with an emphasis on understanding geometric patterns and concepts. Topics include art-related examples and hands-on experiences which give basic mathematical background for future artistic students' endeavors.

MTH 119 three credits **M**
Math and Music
Prerequisite: minimal ability to read music

Topics which emphasize and explore the close connection between mathematics and music. Historical connections will be studied, as well as the mathematics behind acoustics, rhythm, and 20th century music, and mathematical theories of randomness, leading to fractal music and fractal noise. The mathematical structures behind non-Western musical theories such as pentatonic and quarter-tone scalings, and polyrhythms will be explored.

MTH 120 three credits **M**
Quantitative Reasoning
Prerequisite: Satisfactory score on mathematics placement exam

Fundamentals of quantitative literacy including inductive-deductive reasoning, paradoxes, and problem-solving strategies. Numeracy including estimation, scaling, uncertainty, and infinity will be discussed. Rate of change, linear and exponential models will be explored. Applications of quantitative reasoning to the social sciences will be emphasized.

MTH 127 three credits **M**
Evolution of Mathematics As the Language of Nature
Prerequisite: above average score on MTH 101 placement test; or permission of instructor

Eratosthenes measured the earth without encircling it more than two thousand years ago. Elementary mathematics will be used to rediscover Eratosthenes and other human giants' methods in measuring the distance from Earth to the moon, the sun or other heavenly stars, to find out the precise orbit of Mars, and to prove that the planets (including Earth) do accelerate towards the sun. Philosophy and the foundation of principles in science will be discussed, such as quantitative verses, qualitative principles, and the discovery that Nature is written in the language of mathematics.

MTH 131 three credits **M**
Pre-calculus

This course is designed to provide students with the precalculus background necessary for MTH 111 or MTH 105. The course covers topics in algebra, trigonometry and finite mathematics.

MTH 181/182 three credits each
Introduction to Discrete Structures I, II

Review of set algebra including mappings and relations, algebraic structures including semigroups and groups. Elements of the theory of directed and undirected graphs. Boolean algebra and propositional logic. Applications of these structures to various areas of computers.

MTH 203 three credits
Technical Calculus III
Prerequisite: MTH 106

Continuation of MTH 106. Topics include conic sections, polar coordinates, functions of two variables, partial differentiation, multiple integration and infinite series.

MTH 204 three credits
Elementary Differential Equations
Prerequisite: MTH 203

Techniques in the solutions of ordinary differential equations, and applications from engineering. Similar to MTH 212 with less emphasis on theory and more on applications. The natural continuation of MTH 203.

MTH 211 four credits
Analytic Geometry and Calculus III
Prerequisite: MTH 112

Continuation of MTH 112. Two and three dimensional vectors, partial differentiation, multiple integrals and applications.

MTH 212 three credits
Differential Equations I
Prerequisite: MTH 112

Continuation of MTH 211. Ordinary differential equations of the first order, linear differential equations of the nth order, some nonlinear second order equations, series solutions and Laplace transforms.

MTH 213 four credits
Calculus for Applied Science and Engineering III
Prerequisite: MTH 114

Continuation of MTH 114. An introduction to multivariable and vector calculus. The course covers multivariable functions, partial differentiation, multiple integrals, parameterized curves and surfaces, vector fields, line integrals, flux and divergence.

MTH 221 three credits
Linear Algebra
Prerequisite: MTH 111

Required of all second-year mathematics majors and recommended for students in the physical, natural, behavioral and management sciences. Course material includes systems of linear equations, matrix theory, vector spaces, linear transformations, Eigenvalues.

MTH 227 three credits
Linear Algebra for Applied Sciences
Prerequisite: MTH 111

A first course in linear algebra covering general theory of matrices and linear systems. Topics include: Matrices and linear systems, determinants, vector spaces , orthogonality, and eigenvalues. Computer laboratory exercises included..

MTH 231 three credits
Elementary Statistics I
Prerequisite: MTH 101 or equivalent

Fundamental business statistics. The text, examples, and applications are all business-oriented. The first-semester topics include descriptive statistics, probability, estimation, statistical inference and sampling.

MTH 232 three credits
Elementary Statistics II
Prerequisite: MTH 231

Continuation of MTH 231. Regression and correlation analysis. Analysis of variance. Goodness-of-fit tests. An introduction to Bayesian decision methods.

MTH 233 three credits
Elementary Applied Statistics (Honors)
Prerequisites: College Algebra and at least a score of 570 on Math SAT, or permission of the instructor

Topics in descriptive and inferential statistics including summary measures, discrete probability, normal density functions, point and interval estimation, hypothesis testing procedures, t-tests, analysis of variance, chi-square tests, correlation, and regression analysis. A statistical computer software package will be extensively utilized. Condensing the topics covered in MTH 231 and 232, this course satisfies the MTH 231/2 require-ment of most business-related majors.

MTH 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

MTH 302 three credits
Theory of Numbers

A study of the integers, divisibility properties, diophantine equations, congruences, quadratic residues, Pythagorean triangles and selected higher topics.

MTH 310 three credits
Modern Methods in Mathematics Teaching
Prerequisite: mathematics major

The use of techniques and materials in teaching the mathematical sciences in grades 8-12. Special attention will be given to new information technology and its use in enhancing learning and problem-solving abilities. This course will concentrate on the integration of commercially-available computer software into the mathematics curriculum in algebra, geometry, statistics, and precalculus, as well as with more traditional materials. This course is for mathematics majors intending to teach.

MTH 311 three credits
Advanced Calculus I
Prerequisite: MTH 212

This course is a rigorous analysis of the concept of limits, continuity, the derivative and other selected areas.

MTH 312 three credits
Advanced Calculus II
Prerequisite: MTH 311

Continuation of MTH 311 with emphasis on uniform convergence and related topics.

MTH 321 three credits
Topics in Applied Mathematics I
Prerequisite: MTH 212

A study of Fourier Series and Integrals, Fourier and Laplace Transforms, Partial Differential Equations.

MTH 322 three credits
Topics in Applied Mathematics II
Prerequisite: MTH 321

Continuation of MTH 321. The course covers Besel functions and Legendre polynomials; calculus of variations, vector analysis.

MTH 331 three credits
Probability
Prerequisite: MTH 112

A calculus-based introduction to statistics. This course covers probability and combinatorial problems, discrete and continuous random variables and various distributions including the binomial, Poisson, hypergeometric normal, gamma and chi-square. Moment generating functions, transformation and sampling distributions are studied.

MTH 332 three credits
Mathematical Statistics
Prerequisite: MTH 331

Continuation of MTH 331. Classical estimation methods and hypothesis testing are studied. This course also covers Chi square tests for goodness-of-fit and independence, regression and correlation analysis, and one-way and two-way analysis of variance including factorial designs and tests for the separation of means.

MTH 353 three credits
Applied Linear Algebra
Prerequisites: MTH 221, CIS 261

Orthogonality and least square problems. Other topics include applications of eigenvalue, quadratic forms, Numerical Linear Algebra.

MTH 361 three credits
Numerical Analysis I
Prerequisites: MTH 221, 212, CIS 261, (MTH 221 may be taken concurrently)

Theory and computer-oriented practice in obtaining numerical solutions of various problems. Topics include stability and conditioning, nonlinear equations, systems of linear equations, interpolation and approximation theory.

MTH 362 three credits
Numerical Analysis II
Prerequisite: MTH 361

Numerical methods for solving initial value problems. Topics include: numerical differentiation and integration, Euler method and Taylor's series method, Runge-Kutta methods, multi-step methods, and stiff equations.

MTH 381 three credits
Combinatorial Theory
Prerequisites: MTH 111, 112, 181, 182, 221

Techniques of counting: elementary enumerative methods, generating functions, partitions, recurrence relations, inclusion-exclusion principle, the Polya theory of counting, generalizations of the pigeonhole principle and selected topics from experimental design and coding theory.

MTH 382 three credits
Graph Theory
Prerequisites: MTH 111, 112, 181, 182, 221

A study of graph theory and its applications. Topics included are Hamiltonian and Eulerian properties, matching, trees, connectivity, coloring problems, and planarity. Emphasis will be on applications including optimization of graphs and networks.

MTH 421 three credits
Complex Analysis
Prerequisite: MTH 211

Analytic functions, differentiation, integration, conformal mapping, calculus of residues and infinite series.

MTH 441 three credits
Modern Algebra I
Prerequisite: MTH 221

The study of relations, functions, groups, rings and fields.

MTH 442 three credits
Modern Algebra II
Prerequisites: MTH 221, 441

This course deals primarily with the following: Sylow theorems, polynomials, field extensions and Galois theory.

MTH 451 three credits
Differential Geometry
Prerequisite: MTH 312

Analysis of curves and surfaces. Frenet-Serret formulae. First and second fundamental forms for surfaces, Gaussian and mean curvature, theorems of Meusnier and Rodriques, and the Gauss-Bonnet theorem are also studied.

MTH 452 three credits
Introduction to Higher Geometry
Prerequisite: MTH 211

A survey of the history of geometry, emphasizing the scholars of antiquity. Topics from modern (college) geometry, projective and non-Euclidean geometries.

MTH 461 three credits
Elementary Topology
Prerequisite: MTH 312

An introduction to point-set and combinatorial topology.

MTH 463 three credits
Math Modeling

Selected topics from the areas of linear programming, dynamic programming, Markov chains and game theory. Mathematical model building will be developed through the use of numerous case studies from the natural and social sciences, e.g., ecological models, network models, scheduling models, urban structure, traffic flow, growth, etc.

MTH 464 three credits
Simulations

Deterministic and nondeterministic simulation. Random number generators, Monte Carlo techniques, discrete simulation tech-niques and simulation computer languages (e.g., GPSS, SIMSCRIPT) are studied. Standard Simulations Models, such as the national economy model, inventory control, banking, blackjack, etc., will also be covered.

MTH 487 three credits
Mathematical Inquiry I
Prerequisite: MTH 212

Course is conducted as a seminar. An elementary question is posed to the students who must generate their own mathematics in an attempt to find a solution. The aim is to develop student independence and creativity.

MTH 488 three credits
Mathematical Inquiry II
Prerequisite: MTH 212

A second semester of inquiry, independent of the first.

MTH 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

MTH 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

MTH 499 three credits
Selected Topics in Mathematics
Prerequisites: MTH 212 and permission of department

A special course to meet the needs of students for material not encountered in other courses. Topics dealt with require the approval of the departmental chairperson.

Graduate Courses in Mathematics Education for Master of Arts in Teaching

Complete course descriptions are available in the *Graduate Catalogue*.

MAE 507 three credits
Probability for Teachers

An introduction to the discrete probability theory in an experimental hands-on way.

MAE 508 three credits
Statistics for Teachers

Surveys the statistical methods used in science and everyday life and addresses the problem of pedagogy and statistical misconceptions.

MAE 511 three credits
Calculus and Analysis for Teachers

Addressing the key underlying idea of the mathematics change: notions of variation, rate, mean value, and accumulation across many contexts and representations, as well as the connections between rates and accumulation as embodied in the Fundamental Theorem of Calculus.

MAE 520 three credits
Discrete Math for Teachers

Topics in discrete mathematics, including combinatorics, logic and set theory, algorithms, linear algebra, relations and functions, elements of number theory, and chaos/fractals.

MAE 521 three credits
Geometry for Teachers

Surveys the new types of geometry made possible by dynamic computer graphics as well as topics that help students deepen their understanding of the key ideas of Euclidean geometry.

MAE 522 three credits
Algebraic Structures for Teachers

The many forms of algebraic reasoning and their conceptual underpinnings, the fundamental shift in the place of algebra in school mathematics, and the potential unifying role of abstract and general algebraic structures at the upper secondary level.

MAE 591/592 three credits each
Topics in Mathematics for Teachers

Individual and/or group study under supervision of a faculty member in an area of mathematics for teachers that is not otherwise part of graduate course offerings.

Medical Laboratory Science

In medical laboratory science, both the clinical laboratory science option and the cytotechnology option provide students with the concepts, professional attitudes, scientific theory and skills essential for practicing clinical laboratorians. Medical laboratory science leads students to understand the health care delivery system and the role of the clinical laboratory scientist and cytotechnologist in that system, to function as professionals, and to gain the skills and attitudes needed to enter their practice. All graduates are eligible for national certification and licensure.

Students use state-of-the-art equipment and laboratory methods in the new, modern-design laboratory facility. The medical laboratory science faculty are professional laboratory scientists and leaders in local, regional, and national professional and scientific organizations who influence the practice of the profession by serving on committees and as consultants.

Faculty and Fields of Interest

Dorothy A. Bergeron immunohematology, health education, professional issues

Eileen Carreiro-Lewandowski clinical chemistry, biochemistry, laboratory regulation

Mary Lou Frias human ecology, pathophysiology

James T. Griffith (chairperson) microbiology, antimicrobial agents, health legislation

Frances W. Ingersoll clinical microbiology, health education

Susan J. Leclair hematology, health planning

Frank J. Scarano molecular epidemiology, clinical microbiology

Catherine Sheehan immunology, urinalysis, body fluids

Medical Laboratory Science Major

BS degree

Entrance to Medical Laboratory Science

Admission is arranged by the University Office of Admissions. In addition to the general course requirements for admission, the Department of Medical Laboratory Science more specifically requires 2 units of Natural Science and 3 units of College Preparatory Mathematics which must include 2 units of algebra.

Admission of Transfer Students and Certified Clinical Laboratory Technicians

Transfer students seeking admission to the medical laboratory science major must meet the same entrance requirements as those who apply as freshmen. Credits earned in another college may be accepted as transfer credits after evaluation of official transcripts. All required Medical Laboratory Science courses must be taken at the University of Massachusetts at Dartmouth, unless approved by the department.

Health Policies

Students admitted to medical laboratory science programs are expected to have a complete physical examination and the appropriate immunizations as outlined by the department.

Clinical Laboratory Science Option

The option in clinical laboratory science is an integrated program, accredited by the National Accrediting Agency for Clinical Laboratory Sciences. The program officials are David K. Rubin, MD (Medical Advisor), and Dorothy A. Bergeron, MS (Program Director). The clinical laboratory theory and methods integrated throughout the four-year curriculum culminate with a clinical practicum in an affiliated hospital during the second semester of the senior year. Laboratory instrumentation, use of computers in laboratories, and quality assurance are emphasized throughout. Careers are available in hospital, independent, public health, industrial, pharmaceutical, and private laboratories as scientists and researchers, and some clinical laboratory scientist work as educators, administrators, and consultants. By presenting a diverse background in science, analytical skills, and problem-solving, medical laboratory science prepares students for post-graduate studies in the sciences (including chemistry, microbiology, pathology), administration (including human resource management, health service administration, and business administration) and professional schools (including medical, osteopathy, and physician assistant).

After completion of this program, the graduate will be able to demonstrate entry level competencies in the following areas of professional practice:

- collect and process biological specimens for analysis;
- perform analytical tests on body fluids, cells, and other samples;
- make critical judgments by integrating and relating data generated by the various clinical laboratory departments;
- evaluate quality control results and institute corrective procedures;
- perform preventive and corrective maintenance on equipment and instruments or refer to appropriate source for repair;
- evaluate new techniques and procedures in terms of usefulness and practicality within the context of a given laboratory's resources;
- demonstrate concern for the patient and cooperate with laboratory personnel and other health care professionals;
- communicate effectively and in a professional manner with patients, laboratory personnel, other health care professionals, and the public;
- assume responsibility for continuing professional development and competence;
- assume leadership to effect positive change in the profession;
- apply principles of safety, management and supervision, education methodologies, and current information systems.

Entrance to the Upper Division of the Option in Clinical Laboratory Science

The Committee on Advanced Standing meets each spring to evaluate the academic and professional progress of sophomore students. After reviewing the records, the committee recommends to the department faculty those students to be admitted to the upper division of the option in clinical laboratory science. Conditional acceptance with academic qualifications is possible in unusual circumstances.

Admission to the upper division of the option in clinical laboratory science requires:

1. completion of all prerequisites in the first two years as outlined in the requirements;
2. a minimum cumulative science grade point average of 2.0 in all **completed** courses required by the major;
3. evidence that the student is able to meet the following non-academic criteria (technical standards)
   - Observation. The student must be able to participate actively in laboratory exercises and clinical experiences.
   - Communication. The student must be able to communicate with fellow students, faculty, staff and members of a health care team.
   - Motor. The student must have sufficient motor skills to perform basic diagnostic tests.
   - Intellectual/Conceptual, Integrate and Quantitative Abilities. The student must be able to problem solve and comprehend spatial relationships of structures.
4. evidence that the student is making progress toward satisfying degree requirements and certification requirements.

Clinical Practicum

The faculty assigns the students in the clinical practicum at the following affiliates: Charlton Memorial Hospital (Fall River, MA), St. Anne's Hospital (Fall River, MA), Morton Hospital and Medical Center (Taunton, MA), New England Medical Center (Boston, MA), Rhode Island Blood Center (Providence, RI), Roger Williams Medical Center (Providence, RI), St. Luke's Hospital (New Bedford, MA), and Veterans Administration Medical Center of Providence (Providence, RI).

Electives

Students may choose any available free elective courses for which they qualify. Students may wish to select their elective courses to provide the basis for a particular medical laboratory science specialty or so as to be eligible for another major of their choice should they change their career plans.

Academic Regulation

In the clinical laboratory science option, each medical laboratory science course must be satisfactorily completed as defined in the "Policy for Successful Completion of Medical Laboratory Science Courses," distributed to all students as they begin their course of study.

Medical Laboratory Science Major
Clinical Laboratory Science Option

Requirements

		Semester Credits	
		First	**Second**
First Year			
MLS 115, 116	Introduction to Medical Laboratory Science I, II	1	1
BIO 111	Introduction to Human Physiology	4	
CHM 151, 152	Principles of Modern Chemistry I, II	3	3
CHM 161, 162	Introductory Applied Chemistry I, II	1	1
MTH 104	Fundamentals of Statistics		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Humanities/Social Sciences/Literature Electives	3	6
		15	**17**
Second Year			
MLS 315	Human Genetics	3	
MLS 317	Human Genetics Laboratory	1	
MLS 226	Pathophysiology		3
MLS 228	Pathophysiology Laboratory		1
MLS 360	Clinical Chemistry Applied to Diagnostic Techniques		3
MLS 362	Clinical Chemistry Applied to Diagnostic Techniques Laboratory		1
CHM 251	Organic Chemistry I	3	
CHM 263	Bio-Organic Chemistry Laboratory	1	
	Humanities/Social Sciences/Literature Electives	6	6
	Free Elective		3
		14	**17**
Integrated Program			
Third Year			
MLS 301	General Microbiology	4	
MLS 309	General Microbiology Laboratory	1	
MLS 302	Medical Bacteriology		3
MLS 304	Medical Bacteriology Laboratory		1
MLS 305	Clinical Immunobiology	3	
MLS 307	Clinical Immunobiology Laboratory	1	
MLS 322	Fundamentals of Clinical Hematology		2
MLS 324	Fundamentals of Clinical Hematology Lab		1
MLS 449	Special Laboratory I Lecture		2
MLS 451	Special Laboratory I		1
PHL 317	Ethics and Health Care Professionals		3
	Free Electives	3	
		12	**13**
Fourth Year			
MLS 401, 402	Clinical Microbiology I, II	5	4
MLS 409, 410	Immunohematology I, II	2	2
MLS 419, 420	Clinical Biochemistry I, II	5	4
MLS 429, 430	Hematology I, II	3	3
MLS 439	Clinical Microscopy	2	
MLS 450	Special Laboratory II		2
		17	**15**
	Total Credits		**120**

Medical Laboratory Science Major
Cytotechnology Option

The option in cytotechnology is a distinct specialty within the clinical laboratory involved in the microscopic evaluation of cells to detect morphologic changes related to benign and malignant disease. The first three years are spent on campus building a foundation in biology, chemistry, math, and medical laboratory science, followed by a one year clinical practicum in an accredited hospital program. A strong sense of responsibility, ability to concentrate, and an interest in natural science are necessary qualities for a cytotechnologist. Career opportunities are excellent. Cytotechnologists are employed as laboratory managers, educators, medical sales representatives, technical representatives, and scientists in private and hospital-based laboratories, state, federal or industrial laboratories, research laboratories and veterinary laboratories. Graduate study possibilities include pathology, anatomy, or genetics.

Entrance to the Option in Cytotechnology

Students interested in this option are encouraged to discuss cytotechnology with the department chairperson as early as possible to select the most appropriate courses. Application for this option should be made during the spring semester of the sophomore year and no later than the fall semester of the junior year. Generally, students apply for admission to the accredited hospital program in the fall semester of the junior year.

See requirements on next page.

Requirements

1.
A minimum of 20 semester hours of approved courses in biological and laboratory science.
2.
A minimum of 8 semester hours of chemistry.
3.
All requirements of the university and the College of Arts and Sciences for a B.S. degree.
4.
Free electives to bring the total to 90 credits, preceding the fourth year.
5.
Successful completion of an accredited hospital cytotechnology program.

Each hospital cytotechnology program determines the number of credits in a specific course based on the nature of the laboratory and the range of case presentations.

A minimum of thirty credits from the courses listed below are granted at the completion of the hospital cytotechnology program.

MLS 461	Introduction to Cytotechnology
MLS 462	Special Topics in Cytotechnology
MLS 463	Cytopathology
MLS 464	Medical Cytology
MLS 465	Cytotechnology Seminar
MLS 466	Applied Cytotechnology
MLS 467	Cytology Practicum
MLS 468	Cytology Practicum II

All students must be recommended by the department chairperson to the approved hospital program. The university cannot guarantee placement in an approved hospital program.

Clinical fees are established by the hospital program. Students are required to pay this fee in addition to the usual university fees.

MLS 105 three credits **S**
Contemporary Topics in Human Ecology I

Medical-social problems as they relate to modern society. Contemporary topics such as human inheritance and eugenics, factors affecting I.Q., basic human physiology, the disease state, birth control and abortion. This course satisfies the science distribution requirement.

MLS 106 three credits **S**
Contemporary Topics in Human Ecology II

Continuation of MLS 105. This course satisfies the science distribution requirement.

MLS 111 one credit
Medical Laboratory Science Seminar

A basic orientation to the field of laboratory medicine. The specialty areas of medical laboratory science, manpower problems, upward mobility, professional organizations, accreditation, certification, the team concept and professionalism are discussed.

MLS 113 one credit
Introduction to Clinical Laboratory Techniques

An introduction to the fundamental techniques used in the clinical laboratory. Topics shall include qualitative and quantitative testing on body fluids, safety and quality control.

MLS 115 one credit
Introduction to Medical Laboratory Science I

Specialty areas, professional issues, career mobility and an introduction to the university and its facilities presented in lectures, field trips and laboratory experiences. Fundamentals of clinical laboratory techniques will be interspersed with lectures and discussions. Library, computer and Student Resource Center facilities will be utilized during class time.

MLS 116 one credit
Introduction to Medical Laboratory Science II

Continuation of MLS 115.

MLS 226 three credits
Pathophysiology
Prerequisite: BIO 111 or permission of instructor

The selection, generation, and translation of basic information for the diagnosis, prognosis and management of clinical samples. Health screen vs. diagnostic and prognostic profiles will be discussed.

MLS 228 one credit
Pathophysiology Laboratory
Corequisites: MLS 116, 226
Prerequisite: MLS 116 or permission of instructor

A laboratory correlated with MLS 226.

MLS 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

MLS 301 four credits
General Microbiology
Prerequisite: MLS 360 or permission of instructor

This course presents the basic concepts of physiology, genetics, morphology, ecology, systematics and control of microorganisms.

MLS 302 three credits
Medical Bacteriology
Prerequisite: MLS 301

The theoretical basis for an in-depth understanding of organisms of medical importance. Stress shall be placed on bacterial physiology as it relates to disease. Quality control, statistical methods, and current literature shall be analyzed.

MLS 304 one credit
Medical Bacteriology Laboratory
Corequisite: MLS 302
Prerequisite: MLS 309 or permission of instructor

A laboratory correlated with MLS 302.

Gen Ed note: Medical Laboratory Science courses satisfy the Natural Science and Technology requirement. Those marked **S** below are appropriate for non-science/ engineering majors.

Senior-Level Courses: Option in Clinical Laboratory Science

MLS 305 three credits
Clinical Immunobiology

The emerging concepts of immunobiology. Topics will include immunogens, immunoglobulins, autoimmunity, infection and immunity, immunohematology, and tumor biology.

MLS 307 one credit
Clinical Immunobiology Laboratory
Corequisite: MLS 305

A laboratory correlated with MLS 305.

MLS 309 one credit
General Microbiology Laboratory
Corequisite: MLS 301

A laboratory correlated with MLS 301.

MLS 311 one to three credits
Medical Laboratory Science Seminar I
Prerequisite: Junior or senior standing or permission of instructor

Selected topics shall be presented, determined by current interests and developments in clinical laboratory science.

MLS 312 one to three credits
Medical Laboratory Science Seminar II
Prerequisites: Junior or senior standing and permission of chairperson

Selected topics shall be presented by both faculty and students. Topics shall be submitted from affiliated hospitals.

MLS 315 three credits
Human Genetics

An intensive survey of genetic mechanisms emphasizing the effect on human inheritance and disease.

MLS 317 one credit
Human Genetics Laboratory
Corequisite: MLS 315

A laboratory correlated with MLS 315.

MLS 319 three credits
Health Care Legislation

Major, recent, and pending health care legislation and its impact on the provider will be discussed. Possible topics include: Medicare, Medicaid, health manpower, accreditation, licensure, professional standards review, health systems agencies, and national health insurance.

MLS 322 two credits
Fundamentals of Clinical Hematology
Prerequisites: MLS 226, 228, 315, 317; or permission of instructor

Introduction to the pathophysiology of anemias, leukocyte dyscrasias and disorders. Topics may include bone marrow activity, cell energetics, testing protocols and examples of various modalities of therapy.

MLS 324 one credit
Fundamentals of Clinical Hematology Laboratory
Corequisite: MLS 322
Prerequisites: MLS 226, 228, 315, 317; or permission of instructor

Introduction to the morphology and biochemical testing of cells involved in anemias, leukocyte dyscrasias and other disorders. Topics may include bone marrow morphology, peripheral blood morphology and cytochemical testing protocols.

MLS 360 three credits
Clinical Chemistry Applied in Diagnostic Techniques
Prerequisites: CHM 152, 162; or permission of instructor.

Medically relevant carbohydrates, proteins, lipids, hormones, nonprotein nitrogenous substances, and enzymes will be discussed.

MLS 362 one credit
Clinical Chemistry Applied in Diagnostic Techniques Laboratory
Corequisite: MLS 360

A laboratory correlated with MLS 360.

MLS 449 two credits
Special Laboratory I Lecture
Prerequisite: MLS 360 or perm. of instructor

Study of special areas of the clinical laboratory. Intensive study of special topics in such areas as analytical instrumentation, electronics, urinalysis, endocrinology, microbiology, and nuclear medicine.

MLS 451 one credit
Special Laboratory I
Corequisite: MLS 449
Prerequisite: MLS 362

Laboratory course correlated with MLS 449.

The following courses are presented on campus and at affiliated hospitals for an academic year that may exceed the regular academic year. This year will consist of 40 hours per week on campus and/or in affiliated hospital(s). Lecture and laboratory hours shall comply with the standards set by the National Accrediting Agency for Clinical Laboratory Sciences. These are open only to medical laboratory science students or by permission of the Department:

MLS 401 five credits
Clinical Microbiology I
Prerequisites: MLS 302, 304

The principles or practice of diagnostic microbiology such as specimen collection and handling, quality control, and laboratory safety. Clinical correlation, immunology and hospital surveillance will be included.

MLS 402 four credits
Clinical Microbiology II
Prerequisite: MLS 401

Continuation of MLS 401.

MLS 409 two credits
Immunohematology I

The principles of blood banking, including the preparation and storage of blood and its components, donor evaluation, transfusion, required record keeping, and processing of frozen blood. Clinical correlation, quality control and laboratory safety will be included.

MLS 410 two credits
Immunohematology II
Prerequisite: MLS 409

Continuation of MLS 409.

MLS 419 five credits
Clinical Biochemistry I
Prerequisites: MLS 449, 451

Principles of the physical and chemical analysis of medically significant organic and inorganic substances found in human body fluids and tissues. Laboratory instrumentation and electronics, metabolic screening, specimen collection, clinical correlation, quality control and laboratory safety will be emphasized.

MLS 420 four credits
Clinical Biochemistry II
Prerequisite: MLS 419

Continuation of MLS 419.

MLS 429 three credits
Hematology I
Prerequisites: MLS 322, 324

Subjects include the analysis and clinical correlation of quantitative and qualitative variations in blood. Blood cell and other formed element morphology, the dynamics of coagulation, processing and evaluation of human bone marrow, quality control and laboratory safety will be studied.

MLS 430 three credits
Hematology II
Prerequisite: MLS 429

Continuation of MLS 429.

MLS 439 two credits
Clinical Microscopy
Prerequisites: MLS 305, 307

The applied principles of the clinical evaluation of the physical and chemical constituents and formed elements of kidney filtrate. Quality control, laboratory safety and clinical correlation shall be covered.

MLS 450 two credits
Special Lab II
Prerequisites: MLS 402, 410, 420, and 430; or permission of the instructor.

Intensive, integrated study of selected topics in clinical laboratory science including management.

Senior-Level Courses: Option in Cytotechnology

MLS 461 one to three credits
Introduction to Cytotechnology
Prerequisite: Permission of chairperson

A review of cell structure, principles of microscopy, and staining techniques. Anatomy and physiology of the female reproductive system and study of the non-malignant cytology of the female genital tract will be covered. Permission of chairperson required.

MLS 462 one to three credits
Special Topics in Cytotechnology
Prerequisite: Permission of chairperson

Special projects in cytology, cytopathology or cytotechnology are investigated or reviewed and reported by the student. Written or oral presentation is required. Permission of chairperson required.

MLS 463 one to four credits
Cytopathology
Prerequisite: Permission of chairperson

Cytopathology and clinical aspects of cervical dysplasia, carcinoma-in-situ and invasive squamous cell carcinoma. Consideration of endometrial and endocervical carcinoma, other genital tract cancers and radiation effect. Permission of chairperson required. Permission of chairperson required.

MLS 464 one to four credits
Medical Cytology
Prerequisite: Permission of chairperson

Benign and malignant cytology of the respiratory and gastrointestinal tracts will be correlated with anatomy and physiology. Benign, a-typical, and malignant exfoliative cells from the urinary tracts, serous effusion, cerebrospinal fluid and breast secretions will be studied. Permission of chairperson required.

MLS 465 one to two credits
Cytotechnology Seminar
Prerequisite: Permission of chairperson

Presentation, discussion and interpretation of benign, suspicious, and hormonal conditions. The cytological djagnostic criteria of malignant tumors from various body sites and their histopathological correlation will be studied. Permission of chairperson required.

MLS 466 one to three credits
Applied Cytotechnology
Prerequisite: Permission of chairperson

The microscopic evaluation and screening of cytological smears from various body sites. Effects of radiation and of chemotherapy; diagnosis of suspicious and hormonal conditions; cytological observations in pregnancy. Cell research techniques. Epidemiology and current concepts related to cytotechnology. Permission of chairperson required.

MLS 467 one to eight credits
Cytology Practicum I
Prerequisite: Permission of chairperson

The microscopic evaluation and screening of benign cytological smears and smears from cervical dysplasia; carcinoma-in-situ, and invasive malignant tumors of the female genital tract. Permission of chairperson required.

MLS 468 one to eight credits
Cytology Practicum II
Prerequisite: Permission of chairperson

The microscopic evaluation and screening of cytological smears from the respiratory tract, gastrointestinal tract, urinary tract and from body fluids. Continuing evaluation of cytological smears from the gynecological tract. Permission of chairperson required.

Senior-Level Courses Not limited as to option

MLS 495 one to four credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

The student selects a topic for in-depth study. Readings and reports are supervised by a member of the faculty.

MLS 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

MLS 497 two credits
Research Project
4 hours per credit hour per week.
Prerequisite: Permission of instructor

The student initiates a proposal on a selected research topic. The research is done under the supervision of the appropriate faculty member. A completed paper is required.

MLS 498 one to four credits
Research Project

Continuation of MLS 497.

Multidisciplinary Studies

Program Director
Frederick V. Gifun

Students with a GPA of at least 2.0 who wish to pursue in depth more than a single discipline may choose the Multidisciplinary Studies (MDS) major. MDS allows students to design, with advice, a course of study that includes several areas of interest. Considerable latitude is allowed in the design of a program of study, and course work, studios and laboratories from any of the colleges may be included. In this way students have been able to design a major that concentrates on multidisciplinary topics such as:

Cognitive Science
Communications/Advertising
Environmental Studies
Gerontology
International Relations/Business
Scientific Illustration
Sociobiology
Urban Society

and other areas of special interest.

Either the BS or BA degree can be earned in Multidisciplinary Studies, depending on the design of the program of study.

Multidisciplinary studies is intended as an option for students who have some familiarity with college level study. Thus it is available only to students who have completed at least one semester of college work, and not to entering freshmen. Transfer applicants with a minimum of 15 transferrable credits may receive admission, if otherwise qualified, upon the recommendation of the MDS Director, based on an in-person interview with the MDS Director. The earlier a program of study is designed, the greater the flexibility in scheduling the required courses. As with most other changes of majors, requests from seniors can rarely be accommodated.

General Requirements

The core of the Multidisciplinary Studies major is a thematic program of study that encompasses two or more disciplines. This program will consist of a minimum of 36 credits in the selected disciplines, 30 of which must be at the 300 level or above. (Experiential learning and courses in education may not be included in the 300- and 400- level courses.) Ordinarily only three credits of either independent study or directed study may be included in the 30 credits of required 300 level (or above) courses.

To become a Multidisciplinary Studies major the student must, before the end of the Junior year:

- Identify a faculty member who will act as academic advisor and who will assist in the design of the program. (Some Multidisciplinary Studies majors have two advisors.)
- Obtain a "Change of Major" form from the Registrar's Office or the Multidisciplinary Studies Director.
- Write a one-page description of the proposed program of study. This description should include the objectives of the program and a rationale for how the courses chosen meet the objectives.
- Obtain from the director of Multidisciplinary Studies a "Contract" in which the courses that make up the program are to be listed.
- Consult with the faculty advisor and complete the contract.

Students interested in a Multidisciplinary Studies program should be aware that many 300- level courses have 100- or 200-level prerequisites. It is the responsibility of the student to complete prerequisites for 300-level courses. Therefore, considerable care must be taken in planning a program if it includes 300-level courses in more than two disciplines.

Substitution for courses in the MDS contract is not allowed without prior written approval by the faculty advisor, the program director, and the Dean of Arts and Sciences.

Interested students should contact the Director of Multidisciplinary Studies, at 508 999-8395.

Multidisciplinary Studies Major
BA degree

Requirements

For the BA degree, all College of Arts and Sciences requirements for that degree must be satisfied, and the program listed in the contract, described above, must be completed.

Multidisciplinary Studies Major
BS degree

Requirements

For the BS degree, all College of Arts and Sciences requirements for that degree must be satisfied, and the program listed in the contract, described above, must be completed. In addition, the contract must contain the components of either of the two options given below. ("Sciences" include Biology, Chemistry, Computer and Information Science, Mathematics, Medical Laboratory Science, and Physics.)

Option 1

a) 36 credits in two or three sciences, 30 of which are at the 300 level or higher

b) A two semester sequence of mathematics if mathematics is not a component of a) above

Option 2

a) 15 credits (300 level or above) in one or two sciences

b) 15 credits (300 level or above) in one or two disciplines other than science

c) 9 credits in sciences (any level) other than disciplines included in a) above

d) A two semester sequence of mathematics if mathematics is not a component of a) or c) above

Philosophy

Faculty and Fields of Interest

Philosophy is the cornerstone of the humanities. Pursuing it as a major or as a minor will add an important dimension to one's educational growth. It encourages habits of sustained effort in seeking clarity concerning fundamental values like the good, the beautiful, and the true. Students study what is meant by knowledge and reality. It offers students an excellent opportunity for cultivating skills in clear analytic reassigning. For those with careers interests outside the field of philosophy, it serves well as a double major. Training in philosophy is highly regarded in professional fields such as law, medicine, artificial intelligence or government.

The faculty in the department has a diversity of backgrounds and areas of specialization. this makes possible a solid grounding in the history of philosophy and in the various subareas of philosophy - ethics, logic, metaphysics, philosophy of religion, philosophy of science, theory of knowledge. The approach of the department is pluralistic.

Diane Barense philosophy of logic, philosophy of science, philosophy of language, philosophy of feminism

Philip Cox ethics, medical ethics, philosophy of law, social theory

Richard A. Hogan ancient philosophy (especially Plato), analytic philosophy, history of philosophy, Nietzsche

James Gordon Place (chairperson) history of philosophy, contemporary European philosophy, aesthetics

Philosophy Minor

Requirements

One course in the history of philosophy		Credits
PHL 221	History of Western Philosophy: Ancient **OR**	3
PHL 222	History of Western Philosophy: Modern **OR**	
PHL 223	History of Western Philosophy: Medieval	

Four courses selected from the following list, with the understanding that two of the courses must be upper division (numbered between 300 to 391):

PHL 101	Introduction to Philosophy	12
PHL 102	Philosophical Aspects of Feminism	
PHL 110	Logic	
PHL 207	Introduction to Aesthetics	
PHL 210	Socrates	
PHL 215	Ethics	
PHL 221	History of Western Philosophy: Ancient (if not taken above)	
PHL 222	History of Western Philosophy: Modern (if not taken above)	
PHL 223	History of Western Philosophy: Medieval (if not taken above)	
PHL 224	Nineteenth Century Philosophic Thought	
PHL 226	Marx	
PHL 227	Nietzsche	
PHL 232	Inductive Inference	
PHL 235	Symbolic Logic	
PHL 301	Theory of Knowledge	
PHL 303	Metaphysics	
PHL 311	Philosophy of Language	
PHL 315	Advanced Ethics	
PHL 316	Political Philosophy	
PHL 318	Bioethics	
PHL 320	Philosophy of Science	
PHL 323	Philosophy of Art	
PHL 324	Philosophy of History	
PHL 325	Philosophy of Religion	
PHL 326	Philosophy of Law	
PHL 332	Philosophy of Human Nature	
PHL 350	Plato	
PHL 361	Contemporary Continental Philosophy	
PHL 371	Contemporary Anglo-American Philosophy	
PHL 382	Contemporary American Philosophy	

One seminar from PHL 410-419		3
	Total	**18**

Selection of philosophy as a minor requires that the grade point average in one's major be at least 2.5.

Philosophy Major
BA degree

Requirements

		Credits
PHL 110	Logic (PHL 108 Critical Thinking or PHL 235 Symbolic Logic may be substituted)	3
PHL 221	History of Western Philosophy: Ancient (PHL 223 History of Western Philosophy: Medieval may be substituted)	3
PHL 222	History of Western Philosophy: Modern	3
Two courses in contemporary philosophy selected from:		
PHL 361	Contemporary Continental Philosophy	6
PHL 371	Contemporary Anglo-American Philosophy	
PHL 382	Contemporary American Philosophy	
A seminar course selected from:		
PHL 410-419	Seminar (consult course listings)	3
PHL 350	Plato—may also be taken as a seminar	
At least three courses in systematic philosophy selected from courses numbered 300-349		
PHL 301	Theory of Knowledge	9
PHL 303	Metaphysics	
PHL 311	Philosophy of Language	
PHL 315	Advanced Ethics	
PHL 316	Political Philosophy	
PHL 318	Bioethics	
PHL 320	Philosophy of Science	
PHL 323	Philosophy of Art	
PHL 324	Philosophy of History	
PHL 325	Philosophy of Religion	
PHL 326	Philosophy of Law	
PHL 332	Philosophy of Human Nature	
Two courses selected from the following list:		
PHL 101	Introduction to Philosophy	6
PHL 102	Philosophical Aspects of Feminism	
PHL 107	Thinking and Writing	
PHL 108	Critical Thinking (if not taken above)	
PHL 200	Special Topics in Philosophy	
PHL 207	Introduction to Aesthetics	
PHL 210	Socrates	
PHL 215	Ethics I	
PHL 222	History of Western Philosophy: Modern (if not taken above)	
PHL 223	History of Western Philosophy: Medieval (if not taken above)	
PHL 224	Nineteenth Century Philosophic Thought	
PHL 226	Marx	
PHL 227	Nietzsche	
PHL 232	Inductive Inference	
PHL 235	Symbolic Logic (if not taken above)	
	Total	**33**

Gen Ed Key

All Philosophy courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.
E Ethics and Social Responsibility
W Writing-Intensive Course

PHL 101 three credits **C**
Introduction to Philosophy

An introduction to philosophy as the persistent and methodical attempt to think clearly about universal problems of human life, such as ways of knowing and studies in value.

PHL 102 three credits **C**
Philosophical Aspects of Feminism

An introduction to philosophical reasoning, analysis of arguments and developing of critical skills, through a consideration of various topics relevant to feminism. Topics may include: presuppositions about woman's nature, abortion, sex equality, affirmative action. Cross-listed as WMS 102.

PHL 105 three credits **C**
Special Topics in Philosophy

Offered as needed to present current topics in the field or other material of interest. The specific topic is stated when the course is scheduled. May be repeated with change of content.

PHL 108 three credits **C**
Critical Thinking

A course in informal logic concentrating on the evaluation of reasoning in "real life" contexts. The material for analysis will be drawn from newspaper editorials, political speeches, media articles, textbooks, advertisements, etc.; we will concentrate on arguments about issues of current public interest. The following topics will be emphasized: the identification of arguments; techniques for portraying argument structure; the evaluation and criticism of arguments; informal fallacies; the influence of language on clear thinking; advertising; the news media; the nature of rational belief; science, elementary research techniques. This course is designed for students with no previous background in philosophy. (Students who complete this course should not enroll in PHL 110).

PHL 110 three credits **C**
Logic

An introduction to the methods and principles used to distinguish correct from incorrect reasoning. The course aims at imparting skill in identifying fallacies in reasoning and in using elementary formal techniques to analyze natural language arguments. In addition, such topics as the nature of meaning, the various uses of language, and the logic of science are discussed. (Students who complete this course should not enroll in PHL 108).

PHL 200 three credits **C**
Special Topics in Philosophy

Offered as needed to present current topics in the field or other material of interest. The specific topic is stated when the course is scheduled. May be repeated with change of content.

PHL 207 three credits **C**
Introduction to Aesthetics

An introduction to philosophy through examination of paintings, photographs, poems, novels, and music in order to discover the styles of individual commitment through which people have tried to bring meaning into their lives. While attempting to grasp the aesthetic significance of each work of art, we will continually push toward an understanding of the philosophical dimension of human life as expressed in each work.

PHL 210 three credits **C, W**
Socrates

A study of Socrates through an examination of two sorts of problems—the first (the so-called 'Socratic Problem') is the problem of evaluating the evidence which we possess about Socrates. This will proceed by reading an analysis of Aristophanes' Clouds, Xenophon's Memorabilia and Apology, some passages from Aristotle and the following 'early' dialogues of Plato: Apology, Crito, Euthyphro, the Charmides, Laches and Protagoras. The second problem to be dealt with is the extraction and evaluation of the main tenets of Socrates' philosophy, such as the claims that virtue is knowledge and that no one ever does wrong willingly.

PHL 215 three credits **C, E**
Introduction to Ethics

A critical examination of normative theories of obligation and value. A philosophical examination of some moral problems: abortion, euthanasia, death penalty, sexual equality, reverse discrimination, pornography and censorship, violence, and economic injustice.

PHL 221 three credits **C, W**
History of
Western Philosophy: Ancient

A study of philosophy from its origin with the pre-Socratics to the middle ages. The major portion of the course will be devoted to the philosophies of Plato and Aristotle.

PHL 222 three credits **C**
History of
Western Philosophy: Modern

A study of the major philosophical movements (rationalism, empiricism and critical philosophy) in the 17th and 18th centuries. Philosophers studied include Descartes, Spinoza, Leibnitz, Locke, Berkeley, Hume, Kant. In addition to these major philosophers, consideration will also be given to the work of Rousseau, Pascal, Malebranche, the French Enlightenment.

PHL 223 three credits **C**
History of Western Philosophy: Medieval

A study of the philosophical views developed from the 4th to the 14th centuries. The following Christian, Jewish and Islamic philosophers are studied: Augustine, Beothius, Scotus Erigena, Anselm, Abelard, John of Salisbury, Alfarabi, Avicenna, Averroes, Maimonides, Bonaventure, Bacon, Aquinas, Scotus, William of Ockham, Nicholas of Autrecourt, Marsilius of Padua.

PHL 224 three credits **C**
Nineteenth Century Philosophic Thought

Writings selected from a century of great philosophical vitality and versatility. The culminating achievements of the western philosophical tradition and the first powerful stirring of major contemporary trends are fed by such currents as evolutionism, empiricism, idealism, positivism, existentialism, and dialectical materialism. Philosophers studied include Hegel, Fichte, Bradley, Schopenhauer, Comte, Mill, Spencer, Marx, Kierkegaard, and Nietzsche.

PHL 226 three credits **C**
Marx

Designed as an introduction to the work of Karl Marx for those students who do not necessarily have philosophical backgrounds. The thoughts of Marx will be presented in two parts. At first, the more philosophical

thought of the young Marx will be examined in its relation to Hegel and his followers up to Marx's "settling of accounts" with German philosophy. The second part will deal with the more scientific phase of Marx's thought expressed in *Das Capital*. Marx's own works will form the reading in the course.

PHL 227 three credits **C, W**
Nietzsche

A critical analysis of the major philosophical themes in Nietzsche's thought. Emphasis is placed on Nietzsche's roots in the classical tradition. Readings include most of Nietzsche's major works as well as secondary criticism.

PHL 232 three credits **C**
Inductive Inference
Prerequisites: PHL 110, 235; or consent of instructor

A critical examination of theories about the structure and justification of inductive reasoning. Included will be a study of theories of probability and of the nature of causation.

PHL 235 three credits **C**
Symbolic Logic
Prerequisite: PHL 110 or consent of instructor

A study of the formal techniques of sentential and predicate logic. The course aims at imparting skill in applying logic to natural language arguments and in recognizing and constructing correct deductions and refutations. Philosophical issues pertaining to the application of logic to natural language as well as elementary results of metalogic are discussed.

PHL 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

PHL 300 three credits **W**
Special Topics in Philosophy

Offered as needed to present current topics in the field or other material of interest. The specific topic is stated when the course is scheduled. May be repeated with change of content.

PHL 301 three credits **W**
Theory of Knowledge
Prerequisite: Semester course in Philosophy or consent of instructor

An analysis of the scope and structure of knowledge and its relation to other human activities.

PHL 303 three credits
Metaphysics
Prerequisite: Semester course in Philosophy or consent of instructor

A study of some representative philosophical views on the general structure and ultimate explanation of reality. Some topics considered will be causality, chance and necessity, the problem of first cause. Consideration will also be given to some objections to metaphysics as a philosophical undertaking.

PHL 311 three credits **W**
Philosophy of Language
Prerequisite: Semester course in Philosophy or consent of instructor

An examination of how language relates to the world and to thought. Topics will include the nature of meaning, truth, metaphor, and linguistic competence; speech act theory; and the relation of logic to syntax and semantics. Readings will be from contemporary linguistics as well as from philosophy.

PHL 315 three credits
Advanced Ethics
Prerequisite: PHL 215

Concentrates on the meaning of ethical terms, the objectivity of moral judgments and the justification of these moral judgments. The Is-Ought Question is studied at some length, as well as the possibility of an ontology of morals proposed by contemporary metaphysicians.

PHL 316 three credits
Political Philosophy
Prerequisite: Semester course in Philosophy or consent of instructor

A study of some of the major themes and problems traditionally considered by political philosophers. A consideration of what constitutes a political problem and a discussion of the role of philosophy with regard to such problems. The course thus combines an analytical and an historical approach in the effort to relate traditional political thought to contemporary problems.

PHL 317 three credits
Ethics and Health Care Professionals
Prerequisite: Junior standing in Medical Laboratory Science, Nursing, Psychology, or Sociology

An examination of the ethical aspects of the health care professions, and the impact of the ethical issues on the professional's life. Topics include: responsibility, conscience, professional codes of ethics, privacy, informed consent, access to health care, loss, and death.

PHL 318 three credits
Bioethics
Prerequisite: PHL 215 or its equivalent; or consent of instructor

A study of the ethical issues related to death and dying, behavior control, genetic counseling and genetic engineering, and population limitation. The work of specific research projects and institutes will be studied.

PHL 320 three credits **W**
Philosophy of Science
Prerequisite: Semester course in Philosophy or consent of instructor, or third year in Mathematics or a science major.

A critical analysis of science and its methods, a study of the justification and the range of scientific knowledge.

PHL 323 three credits
Philosophy of Art
Prerequisite: Semester course in Philosophy or consent of instructor

Continues on a more advanced level the development of a theory of art already begun in the introduction to aesthetics. Themes to be discussed include the nature of form and expression in art, the nondiscussive character of art, the similari-

ties and differences between the artist's relation to the work of art and the spectators', the relation between art and subjectivity, the difference between the linguistic and visual arts, the social function of art. The works of a few major philosophers will be compared to give students alternative points of view.

PHL 324 three credits
Philosophy of History
Prerequisite: Semester course in Philosophy or consent of instructor

This course will consider various theories that have been proposed for interpreting history, as well as recurrent problems about the structure of historical explanation, the possibility of objectivity in history, and the relationship between history and the social sciences.

PHL 325 three credits
Philosophy of Religion
Prerequisite: Semester course in Philosophy or consent of instructor

Analytical and constructive study of central concepts and essential manifestations of religion. Both historical and contemporary readings are required.

PHL 326 three credits
Philosophy of Law
Prerequisite: Semester course in Philosophy or consent of instructor

Specific problems about freedom, justice, responsibility and punishment will be considered, as well as problems of legal reasoning, analytical problems of definition and issues of the interrelation of law and morality. Intellectually and practically important especially for students who are considering law school or politics.

PHL 330 (BIO 330) three credits
Evolutionary Approaches to Epistemology
Prerequisites: BIO 113, 210, 437 or equivalent; and PHL 301 or equivalent

A critical exploration of the interaction between Darwinian evolutionary biology and traditional epitemology and the impact of the two fields on one another. The course will demonstrate, with the students as active participants, the nature and fertility of an interdisciplinary inquiry.

PHL 332 three credits
Philosophy of Human Nature
Prerequisite: Semester course in Philosophy or consent of instructor

An examination of the major views on the nature of human beings. The mind-body problem and the problem of freedom will be discussed.

PHL 361 three credits
Contemporary Continental Philosophy
Prerequisite: Semester course in Philosophy or consent of instructor

A study of the various currents of continental European thought in this century with special concentration on existentialism, structuralism, and post-structuralism. Husserl, Heidegger, Sartre, Merlea-Ponty, Saussure, Levi-Strauss, Lacan, Kristeva, Foucault, Derrida and others will be discussed.

PHL 371 three credits **W**
Contemporary Anglo-American Philosophy
Prerequisite: Semester course in Philosophy or consent of instructor

An examination and critique of 20th century analytic philosophy, whose dominant theme has been that philosophical problems are best understood as problems regarding the use of language. Among the writers we will discuss are Moore, Russell, Wittgenstein, Ayer, Carnap, Hemple, Ryle, Austin, Baier, Quincy, Kripke, Putnam, and Rorty.

PHL 382 three credits
Contemporary American Philosophy
Prerequisite: Semester course in Philosophy or consent of instructor

The major positions since the late 19th century (pragmatism, idealism naturalism and process philosophy) will be studied through selected texts from Peirce, James, Royce, Dewey, Santayana and Whitehead.

PHL 410-419 three credits each
Seminars
Prerequisite: Major or Minor in Philosophy or consent of instructor

Intensive study of (1) major philosophers, such as Plato, Aristotle, Kant, Santayana, Whitehead, Wittgenstein, or (2) philosophers related by a common theme in development, such as Aquinas, Scotus, Ockham, or Locke, Berkeley, Hume, or Descartes, Spinoza, Leibnitz, or (3) current philosophical work.

PHL 410 three credits
Hegel

PHL 411 three credits
Rationalists

PHL 412 three credits
Kant

PHL 413 three credits
Aristotle

PHL 415 three credits
Sartre

PHL 416 three credits
Aquinas

PHL 417 three credits
Thinking Machines

PHL 418 three credits
Freud and Philosophy

PHL 419 three credits
Heidegger/Plato

PHL 420 three credits
Directed Honors Thesis
Prerequisite: Major in Philosophy and 3.0 average in philosophy courses

Departmental guidance for a thesis developing out of the primary and continuing interest of the student.

PHL 495 three credits
Independent Study
Prerequisites: Philosophy major; Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

PHL 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Political Science

Political Science offers a variety of courses in the major subfields of the discipline: American politics, comparative politics, international relations, political theory, public administration, and public policy. The program emphasizes the development of analytical and communications skills linked to a substantive understanding of politics, governments, and administration. These skills and a knowledge of political science are useful in a broad range of career pursuits.

UMass Dartmouth Political Science graduates are pursuing successful careers in state, local, and federal government administration, social work, urban planning, the diplomatic service, and business. Some have careers in politics as elected officials, legislative aides, or in lobbying, campaign management, and polling analysis. The departmental program offers several opportunities for student internships that provide practical experience in many of these areas. Finally, many of the department's graduates enroll in some of the nation's leading law, graduate, and professional schools where they go on to careers in college teaching, law, and corporate management.

The Political Science faculty is active in research, government, and community service, and publishes many books and articles in the several subfields of the discipline.

Faculty and Fields of Interest

Clyde W. Barrow political theory (American, European), political economy, public policy (higher education, fiscal)

Michael Baum comparative politics (Western and Southern Europe Africa, Latin America), modern Portugal, democratization theory, development theory and policy, decentralization and regionalism in Europe, workplace democracy

Mary Caprioli international relations, comparative politics, quantitative methodology, feminist theory and gender studies

John J. Carroll (director of university academic advising) American politics (institutions, state governments), public law

Jeffrey L. Dense American politics, constitutional law, public policy

Jean Doyle (associate dean of the college) comparative politics (China, Communist systems) political economy, public policy (women)

Kenneth Luis Manning constitutional law, judicial behavior, American politics

Philip H. Melanson public policy, American politics (governmental secrecy, political violence)

Robert L. Piper (chairperson) American politics (institutions, political thought), public policy (elder affairs)

Political Science Major
BA degree

Requirements

Political Science majors must complete 37 credits in political science. In addition, majors must satisfy specific cognate requirements in selecting their distribution courses for the Bachelor of Arts degree.

The following courses are required:

		Credits
PSC 101	Intro. to American Politics	3
PSC 149	Political Science Laboratory	1
PSC 151	Introduction to Comparative Politics	3
PSC 200-level elective		3
PSC 249	Research Methods in Political Science	3
One course in Political Theory from the following list:		3
PSC 320	American Political Thought I	
PSC 321	American Political Thought II	
PSC 351	Modern Political Thought	
PSC 352	Classical Political Thought	
PSC 353	Non-Western Political Thought	
PSC 354	Marxian Political Theory	
PSC 357	Contemporary Political Thought	
PSC 300-level electives		12
PSC 305	Internship	3
PSC 400-level Research Seminar (One each in junior and senior years)		6
	Total	**37**

Political science majors must also take the following courses which complement and support the major concentration. These courses will satisfy a portion of the distribution requirements in social sciences and humanities in the College of Arts and Sciences:

HST 115	History of the United States I	3
HST 116	History of the United States II	3
ECO 231	Microeconomics	3
ECO 232	Macroeconomics	3
One additional course with a non-western focus in a discipline other than Political Science		3

Political Science Minor

Students choosing to Minor in Political Science must achieve at least a 2.5 average in all Political Science courses and a 2.0 cumulative grade point average. Students must formally declare the minor by the end of their fifth semester and must have completed 54 credits. Appropriate forms will be available from faculty advisors in the Political Science department.

Requirements

The minor in political science consists of 22 credits. Minor course credits must be taken with at least three different professors.

The following courses are required:

		Credits
PSC 101	Intro. to American Politics	3
PSC 149	Political Science Laboratory	1
PSC 151	Intro. to Comparative Politics	3
PSC 249	Research Methods in Political Science	3
PSC 300-level electives		9
PSC 400-level Research Seminar		3
	Total	**22**

Political Science Honors Program

The Political Science Department offers an Honors Program to qualified majors. To be admitted to the program, students must demonstrate outstanding scholarship during their first five semesters. Details of the program may be obtained from the Department Chairperson.

Political Science Courses

Gen Ed Key

C	Cultural and Artistic Literacy
E	Ethics and Social Responsibility
G	Global Awareness
D	Diversity
W	Writing-Intensive Course
I	Information and Computer Literacy
O	Oral Skills

PSC 101 three credits
Introduction to American Politics

Theory and practice of national government in Congress, the Presidency, and the Supreme Court, and the interaction of these institutions with interest groups, political parties, public opinion and the mass media.

PSC 149 one credit **I**
Political Science Laboratory
Corequisite: PSC 101 or 151

An introduction to the discipline of political science. Presents thoughtful reading of a well-defined but narrow body of technical literature upon which a field research experience will be built.

PSC 151 three credits **G**
Introduction to Comparative Politics

Study of political processes, ideologies, constitutional systems and governmental structure of foreign countries including Great Britain, France, Germany, the C.I.S. and selected Third World nations. Comparison with American system of government. Stress laid on the use of the analytical methods. (Formerly PSC 102.)

PSC 201-243 three credits
American Political Issues and Ideas

Issues and ideas courses on selected topics to be developed by instructors as student interest and faculty preference indicate. Students who are not political science majors are particularly invited to enroll in such courses. Anticipated offerings in this category include Introduction to Political Economy, Local Politics, Political Essay, Political Assassinations in America, Fundamentals of Political Behavior.

Recent offerings include:

PSC 201 three credits
International Relations

PSC 208 three credits
Politics of Welfare Reform

PSC 210 three credits
Politics of Health Care Reform

PSC 211 three credits
Politics of Pregnancy

PSC 221 three credits
Political Essay

PSC 222 three credits
Political Assassination in America

PSC 227 three credits
Campaigning for Congress

PSC 249 three credits
Introduction to Political Science Research Methods
Prerequisite: PSC 101 or 151

An introduction to the various subfields of political science from a practitioner's point of view. Students will learn how to study politics "scientifically" using theories, hypotheses, and concepts to explore the relationships among variables. Students will also learn how to define and critique concepts commonly used in professional journals. The course concludes with an overview of descriptive statistics to prepare students for further quantitative study in PSC 349.

PSC 251-299 three credits
World Political Issues and Ideas

Issues and ideas courses on selected topics to be developed by instructors as student interest and faculty preference indicate. Students who are not political science majors are particularly invited to enroll in such courses. Anticipated offerings in this category include Contemporary Issues in the Middle East, Contemporary Issues in World Politics, and Contemporary Issues in Human Rights.

Recent offerings include:

PSC 253 three credits
Contemporary Issues: U.S. & Middle East

PSC 258 three credits
Political Psychology

PSC 261 three credits **G**
Problems US/China Relations

PSC 266 three credits **G**
Problems in Comparative Politics

PSC 286 three credits
Contemporary Issues in World Politics

PSC 291 three credits
Contemporary Issues in Human Rights

PSC 293 three credits
Contemporary Issues in Labor Law

PSC 301 three credits
The Presidency
Prerequisites: PSC 101 and upper-division standing

The development of the contemporary presidency and its position within the American constitutional framework. Special attention will be paid to the presidential selection system, to alternate models of the presidency and to presidential power.

PSC 302 three credits
The Legislative Process
Prerequisites: PSC 101 or permission of the instructor; and upper-division standing

A study of Congress and the Massachusetts state legislature. Elections, legislative organization, leadership of the legislative party, policy making, inter-branch relations and the dynamics of the legislative process are the sub-themes.

PSC 304 three credits **W**
Bureaucratic Politics
Prerequisite: PSC 101 or prior coursework in social science

A broad overview of the development and performance of bureaucratic institutions in the U.S. political system, exploring the extraordinary expansion of bureaucratic authority in recent decades and various explanations of government growth. A review of the historical development of bureaucratic institutions will set the stage for subsequent discussions of the performance of public sector organizations and prospects for significant reform in the next decade.

PSC 305 three to fifteen credits
Internship

Students take part in internship opportunities in the public and private sector, in conjunction with a series of five on-campus seminars with core readings designed to integrate the student's real-world experience with the academic discipline. Students are placed on congressional and state legislative staffs, in state and local government, in the judicial system, in prosecutors' offices, in law firms, and a variety of other public and non profit organizations.

PSC 311 three credits
State Politics
Prerequisites: PSC 101 and upper-division standing

An exploration of politics and government in the American states. The course is a comparative analysis of the 50 states, although special attention will be given to Massachusetts.

PSC 312 three credits
Massachusetts Politics
Prerequisites: PSC 101 or consent of instructor and upper-division standing

An analysis of selected aspects of Massachusetts politics and government: the state legislature, electoral trends, parties, courts, and executive policy are potential subjects. There will be a special emphasis on student research.

PSC 313 three credits **G**
Urban Politics
Prerequisites: PSC 101 and upper-division standing

A critical examination of the urban political community in the United States. Particular attention is given to the adequacy of the city as an arena of conflict resolution and decision-making as well as such current problems as urban reconstruction in the ghettos. Field research in the area by individuals or groups is encouraged but not required.

PSC 314 three credits
Ethnic Politics
Prerequisites: PSC 101 or PSC 238 and upper-division standing (or consent of the instructor)

Explores the impact of ethnicity on American politics in urban settings. It includes an analysis of immigration theory, assimilation theories, the political structure of urban politics (bosses and machines), and the particular relationship between ethnicity and women. A special unit focuses on the Portuguese as an ethnic group and their political behavior in southeastern Massachusetts and Rhode Island.

PSC 315 three credits
Public Policy in America
Prerequisites: PSC 101 and upper-division standing

The policy-making roles, processes, and dynamics of U.S. political institutions, including the federal bureaucracy, media, think tanks, and universities. Major theme and dynamics examined include: governmental secrecy, covert action, the role of scientific experts, and the right to privacy.

PSC 320 three credits
American Political Thought I

American political thought from the Revolution to the Civil War with particular emphasis on ideas of state-building and political economy. Readings may vary, but will likely include the Declaration of Independence, early state constitutions, the Articles of Confederation, The U.S. Constitution, The Federalist, selections from the Jacksonian democrats, and articles by George Fitzhugh.

PSC 321 three credits
American Political Thought II

American political thought from the end of Reconstruction to the New Deal, with particular emphasis on ideas of state-building and political economy. Readings may vary but will likely include William Graham Sumner, selected American Socialists, J. Allen Smith, and Herbert Croly.

PSC 322 three credits **O**
Constitutional Law
Prerequisites: PSC 101 and upper-division standing

Course centers on the development of the constitutional framework of American government. Supreme Court cases will cover judicial review, the powers of the three branches, and federalism.

PSC 323 three credits
Civil Liberties
Prerequisites: PSC 101 and upper-division standing.

In effect the second half of the course on Constitutional Law. The Civil Liberties course deals with the relations between the individual and the state as defined by U.S. Supreme Court decisions. Topics may include rights of racial minorities, freedom of speech, church-state relations, and the rights of criminal defendants.

PSC 325 three credits **O**
Politics and Media
Prerequisites: PSC 101 or PSC 238 and upper-division standing

Explores the relationship between mass media and politics. It includes basic communications theory, the media as socializing agent, the analysis of advertising and the pivotal role played by the media in electoral politics. Special attention is focused on the relationship between the media and

women. The course also focuses on the First Amendment and its role in shaping the media itself as well as political discourse in the American democracy. A class project includes the original filming of a political commercial.

PSC 326 three credits
Labor Relations: Law, Practice, and Policy

An examination of the political and legal framework of U.S. labor relations. The course will include analysis of legislation and Supreme Court and NLRB cases which shape national labor policy and define relations among workers, employers, and the state. Cross-listed as LST 326.

PSC 331 three credits
Political Parties and Interest Groups
Prerequisites: PSC 101 or written permission of instructor; and upper-division standing

The development and function of political parties and political interest groups in American politics. Strategies for lobbying and for creating interest groups also examined.

PSC 332 three credits
Sex Roles and Politics
Prerequisites: PSC 101 or PSC 238 or WMS 100 and upper-division standing

The impact of gender as a variable in American politics. The course analyzes women in the electorate as office holders and as political participants, including participation in political organizations and lobbying groups in American politics. The latter part of the course addresses applied politics in campaign management. Cross-listed as WMS 332.

PSC 333 three credits
Political Behavior
Prerequisites: PSC 101 or PSC 238 and PSC 349, or written permission of instructor; and upper-division standing

Examines political behavior within the American political system. Special emphasis on quantitative methods to examine participation. Original data sets which have provided the sources for assigned readings are supplied. Emphasis on socio-economic models of participation.

PSC 334 three credits
Elder Affairs in American Politics
Prerequisite: PSC 101

The political role of the elderly, the fastest growing age group, and one with the highest rate of voter participation. Public policy issues concerning the elderly and the political dynamic of policy formation.

PSC 338 three credits
Woman as Citizen
Prerequisites: PSC 101 or PSC 238, or permission of instructor; and upper-division standing

The role played by gender, race, and class in defining citizenship. An important theme for analyzing the citizenship status of women stem stems from the public/private dilemma. The course material will develop a critical analysis of that dilemma and how with corollary concepts the citizenship status of contemporary American women is defined. Cross-listed as WMS 338.

PSC 339 three credits **D**
Women and Public Policy

The impact of gender as a variable in American politics. It analyzes women in the electorate as office holders, and as political participants including participation in political organizations and lobbying groups. Cross-listed as WMS 339.

PSC 342 three credits
Public Administration
Prerequisites: PSC 101 and upper-division standing

Examination of the general nature of the bureaucracy in public and private organization and in various cultural contexts. Attention is given to administrative responsibility.

PSC 343 three credits
Business and Government
Prerequisite: PSC 101

The changing relationship between businesses and government at the state, local, and federal levels during the 20th century. Particular attention will be paid to the politics of regulation, price controls, the development of new forms of "social regulation" in the 1960s, and the current trend towards deregulation and privatization. Regulatory programs will be placed in the context of the larger relationship between state and society in the U.S.

PSC 345 three credits **D**
Politics of Public Health

How governments at the federal, state, and local levels cope with threats to the public's health, such as AIDS, lead poisoning, toxic waste, tuberculosis. We will evaluate the effectiveness of government interventions, identify ethical and political pitfalls of present strategies, and assess the prospects for eradicating our most pressing health problems.

PSC 346 three credits
International Institutions for the Earth
Prerequisite: Upper-division standing

An introduction to international agreements, and treaties, created for the protection of the environment. The focus is on recent multi-national conventions under the auspices of the United Nations and other global bodies.

PSC 347 three credits
Environmental Law
Prerequisite: Upper-division standing

An introduction to basic concepts of environmental law. The emphasis is on broad introductory themes.

PSC 348 three credits
Marine Policy and Law

An examination of ocean policymaking in the United States with emphasis on institutional structures, law, and politics involved in managing ocean resources. Main topics covered include fisheries management, coastal zone management, and offshore oil and gas policy; the analysis is drawn from perspectives of public policy, law, and resource management.

PSC 349 three credits
Quantitative Methods for Political Science
Prerequisites: PSC 101 or PSC 238, or permission of instructor; and upper-division standing

Introduces the student to basic statistics and their application to data analysis within a Political Science framework.

PSC 351 three credits
Modern Political Thought
Prerequisite: Upper-division standing

European political theorists from the 16th

through 19th centuries. Course will focus on the development of modern liberalism with some attention to its nineteenth century critics. Readings may vary, but most likely will include the major political writings of Hobbes, Locke, Rousseau, and Bentham.

PSC 352 three credits
Classical Political Thought
Prerequisite: Upper-division standing

European political theorists from ancient Greece through the 15th century. Readings may vary, but most likely will include the major political writings of Plato, Aristotle, St. Augustine, and others.

PSC 353 three credits **G**
Non-Western Political Thought
Prerequisite: Upper-division standing

The political philosophy of non-western thinkers whose ideas had a deep impact on the political institutions in lands outside Europe. Emphasis is on Buddhist, Hindu and Muslim thinkers who at different periods of history gave insightful expositions of human nature in politics.

PSC 354 three credits
Contemporary Political Thought
Prerequisite: Upper-division standing

The recent ideological currents in advanced capitalist societies: neo-conservatism, neo-liberalism, syndicalism, postmarxian socialism, eco-anarchism, and corporate fascism. The course will focus on political thinkers who have made significant contributions to the interpretation of contemporary political and economic developments.

PSC 357 three credits
Marxian Political Theory
Prerequisite: PSC 201 or 204, ECO 232, Soc 200; or permission of the instructor

The basic concepts of 'Radical' political economy. Course will include an in-depth analysis of Marx's *Capital*, Vol. I, as well as a survey of current trends in the development of a critical theory of the state.

PSC 360 three credits **G**
Politics and Governments of Western Europe
Prerequisite: PSC 151 or upper-division standing

The political culture, historical political development, and governmental institutions of major Western European nations, including the European Union. The course will focus on Britain, France, Germany, and Italy.

PSC 361 three credits
Chinese Government and Politics
Prerequisites: PSC 151 and upper-division standing

An introduction to the People's Republic of China and its political process. The interrelationships between China's revolutionary heritage and the development of Maoist ideology and mass mobilization politics, economic policy, and foreign policy will be examined. Finally, post-Mao politics will be studied to determine the degree and direction of change and its implication for Chinese politics and for the Chinese people.

PSC 362 three credits **G, W**
Comparative Communist Systems
Prerequisites: PSC 151 or consent of instructor; and upper-division standing

Analysis of similarities and differences among Communist and post-Communist states—Cuba, China, the C.I.S., and Eastern Europe. Emphasis will be on the internal dynamics of change and the effects of ideological and organizational factors on Communist bloc relations, especially the Sino-Soviet dispute. Formerly PSC 318.

PSC 363 three credits **C, G**
Politics and Government of the Middle East
Prerequisite: Upper-division standing

The politics of the Middle East in terms of the region's history, geography, culture and the impact of the West. Country studies include Turkey, Egypt, Syria, Israel, Jordan, Iraq, Saudi Arabia, and other Gulf States.

PSC 364 three credits
Politics and Government of South Asia

Important political systems in South Asia and South and Southeast Asia. The countries included are India, Pakistan, Malaysia, and the Philippines. Topics included are consti-tutional framework, political process, and salient characteristics of the political culture.

PSC 365 three credits
Comparative Constitutional Law
Prerequisite: PSC 151 or PSC 101

How different constitutional regimes approach such problems as judicial independence, distribution of powers, access to the courts, constitutional interpretation, right to counsel, freedom of conscience, religion, and the press. The topics will vary although attention will be paid to approaches to judicial review, U.S., European and Third World systems will be covered.

PSC 366 three credits **G**
Islam and Politics

The political and cultural history of Islam. Students will learn about the contemporary revolutionary religious movements in Muslim countries and their effect on world politics.

PSC 368 three credits **G, W**
Government of the Commonwealth of Independent States (formerly Soviet Union)
Prerequisite: PSC 151

Ideology, political institutions, public policy, and political behavior in the Soviet Union and C.I.S. since 1917. The relationships among these political phenomena will be examined, as well as, changes which have occurred over time and the reasons for change. Special emphasis will be placed on reform in the C.I.S. under Gorbachev's and Yeltsin's leadership.

PSC 372 three credits **C, E**
Revolutionary Change
Prerequisite: Upper-division standing

Revolution is treated as a special category of social change. The course deals with a comparative analysis of the determinants of revolutionary change in selected areas in Latin America, Africa, the Middle East, and Southeast Asia.

PSC 381 three credits
Contemporary International Relations
Prerequisite: Upper-division standing

Problems in international relations with emphasis on changing characteristics of contemporary world politics. Attention is given to super-power politics and accommo-dations (detente) in Europe, East Asia, the Middle East, and Africa, and the problems associated with the emergence of a new world order.

PSC 382 three credits
American Foreign Policy
Prerequisite: Upper-division standing

A study of the substance and formulation of American policies in world politics. Attention is given to the changing role of the United States in world politics, and the varying constitutional, administrative and political considerations which have effected changes in American foreign policy since World War II.

PSC 383 three credits **G, W**
The Politics of International Economic Relations
Prerequisites: PSC 161 or PSC 361; and upper-division standing

The political origins and impact of international economic issues on both the industrialized and less developed countries. Among the topics to be considered are the politics of the structural aspects of the international political economy (trade, monetary policy, tariff policy, regionalism), institutional aspects (multinational corporations, international lending institutions, aid-giving), and North-South relations and resource distribution. Specific case studies such as global food or energy politics will be used where appropriate.

PSC 384 three credits **G**
International Law and Organization

The course provides insight into all the major dynamics of international law, state succession, recognition, treaties, diplomacy, settlement of international disputes, and international organization (such as the League of Nations and the United Nations).

PSC 391 three credits
Comparative Public Administration
Prerequisite: Permission of instructor or upper-division standing

Comparative study and analysis of the public service system in selected countries in the U.S., Europe, and Asia. Topics include recruitment, selection, promotion, policy making role and social background of the higher civil servants.

PSC 395 three credits **G**
Politics and Development of Modern Portugal

The politics and economic development of 20th century Portugal. This course will explore the links between changes in the socio-economic structures of the country and the transformation of the political system. Portuguese colonialism, the corporatist Estado Novo, and the transition to and consolidation of democracy will be examined from a comparative European perspective.

PSC 400-449 three credits
Seminars in American Politics and Ideas

Recently offered seminars include:

PSC 402 three credits
Seminar: Public Opinion

PSC 403 three credits
Seminar: The Corporate State

PSC 405 three credits
Seminar: Sports and Politics

PSC 407 three credits
Seminar: Identity Politics

PSC 444 three credits
Seminar: Politics of Assassination

PSC 445 three credits
Research Seminar

PSC 450-494 three credits
Seminars in World Politics and Ideas

Recently offered seminars include:

PSC 451 three credits **G**
Seminar: Politics of Development

PSC 456 three credits
Seminar: Globalization

PSC 477 three credits
Research Seminar

PSC 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

PSC 196, 296, 396, 496 variable credit
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

PSC 499 variable credit
Thesis

Undergraduate thesis by arrangement.

Course for the Master of Arts in Teaching

PSC 501 three credits
Teaching Political Science in Secondary Schools

Analysis of the policy-making process, particularly in contemporary American national, state and local politics; comparative analysis of other political systems; development of issue oriented case studies and units for use in secondary social studies courses; development of critical thinking and communications skills.

Psychology

The focus of psychology is the scientific study of behavior. Psychology is studied as a science with the implication that there is a commitment to rational thinking and empirical analysis of the problems encountered in describing and explaining human behavior.

A three-course core sequence introduces students to the way in which psychology as a field advances through scientific research. A wide range of subfields of psychology are offered through courses that emphasize our biological heritage (e.g., physiological psychology, perception) to those that examine basic human functioning (e.g., cognition, learning, personality, social) and those that have a distinct applied orientation (e.g., counseling, behavior modification, organizational, and community psychology).

There are also opportunities for students to engage in independent research and honors research projects and to participate in internships in various clinical settings. The curriculum can be structured to prepare students for graduate education or to include applied clinical coursework and experiences that would allow graduates to seek employment in a variety of human services agencies.

Students who major in psychology find primary employment opportunities in personnel management, elementary and secondary high school education, social work, software and other product development. Higher level psychological activities, such as counseling psychotherapy, university instruction, psychological research (in industry, universities, and research centers) and various administrative mental health positions generally require a master's degree or preferably a doctorate in psychology.

The department also offers a graduate program in psychology leading to a master of arts degree, with distinct clinical and research options.

Faculty and Fields of Interest

Victor P. Caliri counseling and organizational psychology, humanistic and health psychology

Lynn Tondat physiological psychology, recovery following neural damage, and psychopharmacology

John Caruso general psychology, human learning and cognition, sport psychology

John K. Conboy child and family psychotherapy, psychological assessment, sports psychology, child neuropsychology counseling

Donald Corriveau (chairperson) clinical research, counseling, behavioral medicine

Scott Dickman clinical and personality psychology

Paul A. Donnelly counseling psychology, treatment of adolescent and criminal offenders

Morton H. Elfenbein social psychology, group and organizational behavior, evaluation research, epistemology

Debra L. Franko clinical psychology, eating disorders

Barry R. Haimson psychophysiology and perception

William R. Holt general psychology, behavioral and quantitative psychology, developmental psychology

Kimberly Powlishta developmental psychology, children stereotyping, and gender-role development

James B. Riley behavior modification and community psychology

Amy M. Shapiro human learning and memory, educational technology, and psycholinguistics

Judith E. Sims-Knight cognitive and developmental psychology, human-computer interaction

Psychology Major

BA degree

GPA Requirements

The Psychology Department has a GPA requirement that varies with the number of credit hours completed (see below). Failure to maintain the minimum grade point average will mean Departmental Probation. Following two consecutive semesters with a GPA below what is required, the student will no longer be allowed to register for courses designated for psychology majors only.

Number of credit hours/GPA

15 / 1.900	60 / 2.350
30 / 2.050	75 / 2.425
45 / 2.200	90 / 2 500

Major Requirements

Psychology majors must fulfill requirements listed below. Students must have a C- or better in any psychology course taken to meet the requirements listed in the Required Courses and the Area Requirements, including Area 5 PSY electives.

All psychology majors are required to complete successfully General Psychology (PSY 101), Statistics (PSY 205), and Experimental Methods (PSY 210). In addition twenty-one credits must be taken among the five areas listed in the requirements section. This system is designed for the student who wishes to obtain a broad liberal education in the field. Students should plan to complete General, Statistics, Experimental Methods, and their choice from Area 1 (Child or Adolescent Psychology) by the end of sophomore year. Available as electives is a three-course counseling sequence, PSY 406, 407 and 480, which introduces students to some of the applied aspects of psychology. In addition, students who have interests in research and are considering eventual graduate education in psychology may apply to pursue Honors Research. Both of the above options are available for students interested in pursuing clinical research. Students may also participate in the Cognitive Science Program, the interdisciplinary study of issues of the human mind and its applications to effective design (of educational curriculum and experiences, computer software, books, and other products.)

Psychology Courses

Gen Ed Key

G Global Awareness
W Writing-Intensive Course

Required Courses

	Credits
PSY 101 General Psychology	3
PSY 205 Statistics for Psychology	4
PSY 210 Experimental Methods	4
Area Requirements	
Area 1: Choose one of the following:	
PSY 201 Child Psychology PSY 215 Adolescent Psychology	3
Area 2: Choose two of the following:	
PSY 202 Abnormal Psychology PSY 204 Social Psychology PSY 302 Psychological Testing	6
Area 3: Choose one of the following:	
PSY 305 Physiological Psychology* PSY 320 Psychology of Perception	3
Area 4: Choose one of the following:	
PSY 303 Psychology of Learning PSY 308 Cognitive Processes	3
Area 5: Choose at least two upper-level electives, excluding contract learning:	
Psychology electives 300-level and above	6
Total	**32**

Psychology Honors Program

The Psychology Department participates in the university honors program by offering honors sections of general psychology, and it also has a departmental honors program.

The psychology honors program is designed to provide psychology students with the opportunity to engage in independent research. It is recommended for all students who wish to pursue a Ph.D. degree, whether in an experimental or applied area. Honors students typically have GPAs over 3.0, but admission to the honors program is based on overall potential and motivation rather than on grade point average alone.

The sequence begins in the junior year with the identification of a research topic and a faculty advisor. Beginning in their junior year or in the first semester of their senior year honors students carry out an original research project by enrolling in an eight credit honors research seminar.

PSY 101 three credits
General Psychology

A broad survey of principles underlying the systematic study of behavior. Using examples from basic research and applied settings, a variety of perspectives are explored, including findings associated with the physiological, behavioral, cognitive, developmental and social approaches.

PSY 201 three credits
Child Psychology
Prerequisite: PSY 101

A study of the child from both the developmental and experimental approaches. Topics that may be included are methodology in child research, heredity and environment controversy, intelligence, language and communication, learning in infancy and childhood, and motor, cognitive, perceptual, personality, and social development. This course meets the Massachusetts Office for Children requirement for day care center certification, OFC Category A, Child Growth and Development.

PSY 202 three credits
Abnormal Psychology
Prerequisite: PSY 101

Study of development and characteristics of behavior disorders. Topics to be considered include: cause of abnormal behavior, transient personality reaction to acute or special stress, psychoneurotic disorders, and therapeutic measures.

PSY 204 three credits **G**
Social Psychology
Prerequisite: PSY 101

The study of experimental findings, theoretical and methodological issues in understanding the individual in a social context.

PSY 205 four credits **W**
Statistics for Psychology
Prerequisite: PSY 101

An introduction to analysis of quantitative data in psychology, including probability, descriptive statistics, correlation and regression, analysis of variance and data analysis by computer.

PSY 210 four credits **W**
Research Methods
Prerequisites: PSY 101, 205

An introduction to the design, administration and analysis of psychology experiments, and other types of research including computer applications. Emphasis also on evaluation of research and scientific report writing.

PSY 215 three credits
Adolescent Psychology
Prerequisite: PSY 101

A survey of theories of adolescent personality development, psychopathology and current issues in the field.

PSY 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

PSY 302 three credits
Psychological Testing
Prerequisites: PSY 101, 205

An introduction to basic principles and techniques of psychological testing, and a study of the major types of tests.

PSY 303 three credits
Psychology of Learning
Prerequisites: PSY 101, 205, 210

A survey of learning principles from simple conditioning to complex creative behavior.

PSY 305 three credits
Physiological Psychology
Prerequisites: PSY 101, 205, 210; basic biology recommended

The study of the biological basis of behavior. Course covers basic principles of neurophysiology, neuroanatomy, neuropharmacology. This course also covers biological bases of abnormal behavior, drug addiction, visual processing and sleep mechanisms.

PSY 308 three credits
Cognitive Processes
Prerequisites: PSY 101, 205, 210

Introduction to the scientific study of human symbolic processes such as problem solving, creative reasoning, and visual thinking. Alternative theoretical orientations and the development of cognitive processes will also be presented.

PSY 312 three credits
Organizational Behavior
Prerequisite: PSY 101

A review of historical and current psychological theories and empirical data concerning organizational behavior through lectures and experiential learning groups.

PSY 320 three credits
Psychology of Perception
Prerequisites: PSY 101, 205, 210; basic biology recommended

An overview of research methods and results in the area of perception. Special emphasis on role of stimulus variables and attention on the perceptual constancies, color, size, form, and space perception.

PSY 323 three credits
Psychology of Adjustment
Prerequisites: PSY 101, 202, junior standing

A study of the ways in which people adjust to the complex problems of mental health and behavioral dysfunction. The emphasis is on psychosocial models and developmental perspectives rather than medical disease models. Psychoanalytic and behavioral approaches are contrasted with humanistic-existential concepts. Various strategies and approaches for coping with maladaptive and dysfunctional conditions including depression, anxiety, and alcohol and drug abuse are reviewed.

PSY 330 three credits
Personality Theory
Prerequisites: PSY 101, 202, junior or senior psychology major

Study of personality structure and development through analysis of the theoretical contributions of major personologists.

PSY 333 three credits
Psychology in Sports
Prerequisites: PSY 101, 205, 210; or permission of instructor

Investigates behavior in high-level competitive sports and noncompetitive sport activities. Study in the field, which has theoretical, applied and clinical aspects, focuses on athletes, coaches, teams, and spectators.

PSY 375 three credits
Psychology of Sex Differences
Prerequisites: PSY 101, 205, 210

This course is designed to stimulate discussion among men as well as women, by exploring topics such as the development of sex differences, socialization practices, attitudes, values and role expectations which affect the self-concept and interpersonal relationships.

PSY 395 three credits
Politics and Development of Modern Portugal
Prerequisite: Upper-division standing or instructor's permission

This course will explore the links between changes in the socio-economic structures of the country and the transformation of the political system. Portuguese colonialism, the corporatist Estado Novo, and the transition to and consolidation of democracy will be examined from a comparative European perspective.

PSY 406 three credits
Counseling I
Prerequisites: PSY 101, 202, 330

Introduction to philosophies, theories and techniques of counseling, and demonstrations of various psychotherapeutic methods. This course is best taken in the spring of the junior year, so students have the option of taking PSY 407 and PSY 480 in sequence in the senior year.

PSY 407 three credits
Counseling II
Prerequisites: PSY 406, and permission of instructor

Continuation of PSY 406, plus tape experiences and supervised practicum experiences.

PSY 409 three credits
Community Psychology
Prerequisites: PSY 101, and any three among PSY 201, 202, 215, 330, 406

A survey of the theories, techniques, and goals of community psychology, particularly as they relate to the community mental health movement.

PSY 416 three credits
Seminar in Psychopathology

The nature of psychopathology as an evolving set of constructs rooted in a matrix of cultural, biological and behavioral variables. Using the American Psychiatric Association's Diagnostic and Statistical Manual (DSM) criteria to define and order groupings of mental disorders, students study a broad range of issues relating to the diagnosis of psychopathological conditions.

PSY 418 three credits
Behavior Modification
Prerequisites: PSY 101, 205, 210, 303

The course begins with a discussion of ethical standards relevant to the modification of human behavior. Psychodynamic theory is reprised to provide a contrasting theoretical perspective to the therapeutic uses of behavior modification techniques. Classical and operant conditioning procedures are reviewed.

PSY 480 three credits
Field Work in Counseling Psychology
Prerequisites: PSY 202, 302, 370, 406, 407, and permission of instructor

A practical one day a week assignment in a cooperating state or private mental health facility. Where permitted, students will participate in learning about counseling, interviewing, referral and some evaluation techniques. On-site and departmental supervision is required, with a detailed final report.

PSY 490 variable credits
Special Topics in Psychology
Prerequisites: PSY 101, 205, 210, and other upper level courses depending on topic

Advanced seminar usually offered for one semester on a special topic. Check course schedule for special topics seminars. Examples of special topic courses recently offered include: Human-Computer Interaction, Psychopharmacology

Graduate Courses in Psychology

Note: Some graduate courses may be open to undergraduates. Please consult your department chairperson. See the *Graduate Catalogue* for graduate general and program requirements.

PSY 495 variable credits
Independent Study
Prerequisites: PSY 101, 205, 210 and other upper level courses; and permission of instructor

Students independently pursue an individual research project, under the supervision of a faculty advisor.

PSY 498 four credits
Honors Project I
Prerequisites: PSY 101, 205, 210, appropriate upper-level courses, and permission of faculty advisor and course instructor

The first course in the two-course honors thesis sequence. Students meet weekly with their thesis advisors on an individual basis and weekly as an honors seminar group. During the seminar the honors faculty discuss with the students the general issues of developing a thesis and during the individual meetings with the faculty advisor individual issue and problems are discussed. The goal of this course is to develop a thesis proposal and complete the preparation necessary to conduct the thesis project during the next semester. The optimal time to take this course is the spring of junior year, but it may also be taken in the fall of senior year.

PSY 499 four credits
Honors Project II
Prerequisite: PSY 498

Continuation of PSY 498. The goal of this course is to conduct, analyze, and write up the research described in the thesis proposal. Students will meet regularly with their thesis advisors.

Course for the Master of Arts in Teaching

PSY 609 three credits
Early/Middle Adolescence
Prerequisite: Undergraduate child or adolescent psychology or its equivalent

This course will focus on what makes young adolescents distinctly different-issues of puberty, conformity, burgeoning intellectual powers, etc. Of particular concern are two issues: (a) evaluating the validity of the research that provides us with our knowledge of them, and (b) exploring how to apply our knowledge to effective practice both in formal and informal settings.

PSY 501 three credits
Physiology, Psychology, and Psychopharmacology

Provides an advanced study of the physiology of the nervous system and the workings of the brain. Included is a working understanding of psychopharmacology in present day use. Practical application, side effects and utilization of medication in the mental health field today is of specific concern.

PSY 503 three credits
Advanced Psychopathology

Theories of abnormal psychology, in an advanced study of the major forms of psychopathology. Students will be exposed to the Diagnostic and Statistical Manual of Mental Disorders as published by the American Psychiatric Association. Case studies and therapeutic intervention strategies will be emphasized.

PSY 505 three credits
Research Methods and Design

Integrated statistical procedures and research design. Special emphasis will be placed on methodological issues that are likely to confront the graduate in applied settings. Traditional statistical and design concepts, as well as special applied research tools such as survey methodology, program evaluation "small-N" designs, nonparametric and multivariate models will be presented. Commonly available statistical packages will be used throughout. The course will reflect a strong experiential component including data collection, analysis and interpretation.

PSY 506 three credits
Advanced Research Design
Prerequisites: A statistics course and permission of instructor

In-depth study of statistics used in psychological research. Major topics include regression and the general linear model, analysis of variance designs including multivariate analysis, and a practical introduction to factor analysis.

PSY 510 three credits
Seminar in Helping Relationships
Prerequisites: Graduate status and permission of instructor

Comprehensive overview of major approaches to supportive and therapeutic interventions employed by psychologists to help others. Core theoretical constructs and basic counseling techniques are emphasized. This course fulfills a portion of the Mental Health Counselors license requirement. This course fulfills a portion of the Mental Health Counselors license requirement.

PSY 511 three credits
Theories of Psychotherapy

Explores the major counseling theories in an academic and experiential format. Role playing and videotaping are used. Examples of the theories discussed are reality therapy, behavior therapy, rational emotive therapy, gestalt therapy, transactional analysis, client-centered therapy, and the psychoanalytic model.

PSY 512 three credits
Evaluation Techniques

Traditional components of psychological testing, including test construction, test development, test administration and test interpretation, and specific training in frequently administered clinical tests (e.g., MMPI, WAIS and WISC). Beyond traditional test theory, students will be exposed to contemporary evaluation devices including behavioral assessment, interview data, and naturalistic observation.

PSY 513 three credits
Seminar: Topics
Pre- or Corequisite: PSY 506

In-depth seminar on selected topics in a field of psychology. A few specific topics will be examined in depth—the historical roots, theories, and current research approaches. Each fall semester, one of four areas will be covered: personality and psychopathology, cognition, social psychology, perception and psychophysiology. One of the primary goals of this course is to prepare students for PSY 514, in which knowledge gained in this course will be used to conduct research projects.

PSY 514 three credits
Research Techniques: Topics
Prerequisites: PSY 506, 513

The study of research techniques in the context of specific topics studied in the associated seminar. Each spring semester, one of four areas will be covered: Personality and Psychopathology, Cognition, Social Psychology, Perception and Psychophysiology. The course will include both formal and hands-on work.

PSY 515 three credits
Human Growth and Development
Prerequisite: Psychology graduate status

Presentation of the nature of normative transitions across the life span. The course allows for an understanding of change from conception through death. Special emphasis is given to both cognitive and behavioral theories as well as supporting research. This course fulfills a portion of the Mental Health Counselors license requirement.

PSY 516 three credits
Social and Cultural Foundations
Prerequisite: Psychology graduate status

Nature and dynamics of interpersonal group relations as they occur within a multicultural context. Students will study relations among diverse ethnic, racial, and cultural groups in the United States as well as globally. The course looks at cross-cultural relations from an interdisciplinary perspective, considering psychological, sociological, and historical factors; considers several relevant issues in counseling from a multicultural perspective, and studies specific cultural groups in the context of therapy issues. This course fulfills a portion of the Mental Health Counselors license requirement.

PSY 521 three credits
Behavior Modification and Behavior Therapy

Basic principles of learning as theoretical underpinnings of contemporary applied behavioral psychology. Behavior change techniques derived from learning theory widely used in clinical, education, recreational, and family settings will be examined, and individual group applications compared and contrasted.

PSY 522 three credits
Behavioral Family and Group Counseling

Detailed analysis of the function and structure of the family unit. The academic component includes topics such as family systems, behavioral contracting, networking, family sculpting, power, control, setting behavioral goals, the double bind, the identified patient, groups as a system, and the structuralist approach. The experiential component involves the inter-generational family tree, role playing diagnosis, and evaluation of actual families.

PSY 523 three credits
Behavioral Medicine

An interdisciplinary approach to health and illness. Particular emphasis is placed on the interface of psychology and allied disciplines with traditional medical approaches. Students are introduced to medical psychology as a profession and are exposed to practical applications including stress management and biofeedback training.

PSY 524 three credits
Advanced Behavior Modification and Behavior Therapy

Theoretical and functional considerations for the design and implementation of effective behavior programming. Through readings and analysis of case studies, students will gain familiarity with the theoretical and applied principles of behavior modification and therapy.

PSY 528 three credits
Clinical Gerontology

A study of disorders and their treatment in the elderly. The course will provide a hands-on understanding of the occurrence of mental disabilities in an aged population and their remediation. The course presents an in-depth discussion of the symptoms, assessments, and treatments of those mental disorders most frequently encountered in the elderly. The clinical model presented is behavioral-cognitive.

PSY 541 three credits
Contemporary Psychoanalytic Theory

The course is an examination of several of the current psychoanalytic approaches in the treatment of mental illness. Included in the course will be work of the Object Relations Theorists (English school); those working with borderline conditions such as Masterson, Kohut, et al., and the work of Mahler and other researchers of early psychological experiences. (Offered at Bridgewater State College)

PSY 542 three credits
Psychodynamic Psychotherapy

A detailed examination of the application of psychoanalytic theory to marital, family and group systems. The examination of interpersonal relationships which are maladaptive and the change strategies and modalities utilized by the therapist. (Offered at Bridgewater State College)

PSY 551 three credits
Advanced Seminar in Personnel

This course will cover a variety of topics that are important to personnel management and counseling. These topics will include personnel policy formulation and implementation, the use of testing in the industrial setting, the purpose and structure of the interview, the development and implementation of employee assistance programs, etc. Student presentations and/or term papers will be required. (Offered at Bridgewater State College)

PSY 552 three credits
Employee Evaluation Techniques

This course will survey current techniques used in evaluating the training and performance of employees. Appraisal techniques such as employee rating scales, interpersonal ranking methods, and management by objectives will be discussed with particular emphasis on the motivation of employees. (Offered at Bridgewater State College)

PSY 553 three credits
Theories of Research in the Psychology of Motivation

This course examines a critical problem in personnel management today, namely how to develop and sustain a high level of motivation among workers. The program is explored in detail through analysis of psychological theories of motivation and through review of recent research in industrial psychology. (Offered at Bridgewater State College)

PSY 580 three credits
Graduate Seminar in Psychology

Graduate seminar offered for one semester on a specific topic. Topics vary according to student needs and faculty expertise in particular areas of study.

PSY 589 four credits
Graduate Practicum

Graduate Practicum in Clinical Psychology presents a distinctly defined, pre-internship, supervised curricular experience. Course requirements include Massachusetts licensing requirements for Master's level mental health counselors. Students will provide direct service with a clientele appropriate to the program emphasis.

Classroom work will include role plays or other laboratory experiences. Students will be provided with both individual and group supervision experiences.

PSY 590 variable credits
Field Experience

Taken concurrently with PSY 511, PSY 512, and PSY 522. Students are placed at area mental health facilities where they are involved in the practical application of the theories being studied in the classroom. The placements vary according to the specific course being taken conjointly.

PSY 591, 592 four credits each
Internship I, II

Applications of skills acquired through classroom work through internship placements. Students will be placed in mental health agencies and will receive extensive supervision.

PSY 593 variable credits
Seminar in Clinical Methods

Graduate seminar prepares third year graduate students to review research in a major clinical area. Students create an in-depth review of the literature and culminate in a final project which is presented to two graduate faculty for review.

PSY 594 variable credits
Seminar in Professional and Ethical Issues

Advanced seminar on legal, ethical, professional and moral issues facing mental health practitioners. Aspects of testing, assessment, psychotherapy issues and Psychopathology theory will be central issues. The course culminates with a written or oral exam testing application of clinical knowledge, ethical and legal issues through a clinical case study model.

PSY 595 three credits
Independent Study

Independent pursuit of an individual research project under the supervision of a faculty sponsor.

PSY 596 variable credits; typically six
Graduate Thesis

Student develops and executes an independent research thesis under the direction of a faculty advisor. Graded A-F.

Sociology and Anthropology

Sociology Major
BA degree

Faculty and Fields of Interest

The department's primary focus is the study of human beings and the analysis of collective action and the socio-cultural settings in which it occurs. The department offers courses in sociology, anthropology, social work and a number of courses that are primarily interdisciplinary in nature. Sociology is the study of social behavior in its different forms. It is the study of whole societies and their basic institutions (e.g. religion). It also studies human groups on a smaller scale such as the family, peer group, and neighborhood.

Anthropology and sociology overlap somewhat, although an anthropologist is more likely to study non-western societies and to emphasize more the biological base of human behavior, human evolution, and a society's ethos. Social work is the application of concepts from disciplines such as sociology, psychology, and anthropology to an area of concern in modern society. Social work and social action growing out of the basic disciplines (above) increasingly attempt not only to study and treat but create new social realities.

A major in this department may be chosen for the inherent satisfaction the knowledge provides. It also may be the foundation for social action or for graduate work.

Roberta Hazen Aaronson social work, grassroots community organizing, social policy

Geraldine Gamburd anthropology, ecological theory, South Asia, egalitarian and cooperative community alternatives

Jane Hilowitz American society, European society, social change

Toby E. Huff sociology of law, science and religion; quantitative studies of American society; theory; and criminal justice

Donna L. Huse social psychology, community psychology, peer counseling

Andrea C. Klimt ethnicity and nationalism; Portuguese diaspora; Europe and contemporary U.S.; construction of identity; medical anthropology; migration and dislocation

Susan Krumholz criminal justice, issues of abuse

Yale R. Magrass social theory, sociology of knowledge, historical and political sociology, social change, social problems, social psychology, methodology

Larry M. Miller (chairperson) historical sociology and Meso-America, social theory, sociology of art and literature

Thomas K. Ranuga third world studies: Africa, Caribbean and South Africa

R. Penn Reeve anthropology, cultural race and ethnicity, social inequality

Jack Stauder anthropology, political economy, social movements, third world, environmental issues

Students are offered, in addition to the many selections in general sociology, three major options, the option in anthropology, the option in criminal justice, and the option in social services.

The courses listed "SOC or ANT" are courses that bridge the fields of sociology and anthropology. Students may elect to gain credit in either field by registering in the course and selecting one prefix. Anthropology credits can be counted toward a sociology major.

Students must have a 2.0 cumulative grade point average to be accepted into the major and must maintain a 2.5 GPA in major courses in order to graduate with a sociology major.

Sociology Major
General Option

Requirements

Sociology Major Common Departmental Distribution Requirement

To expose sociology majors to important subject areas in the field and offer organization and coherence to their choices, we require one course from each of the following four areas. This departmental distribution requirement is to be met within the requirements and electives of the student's sociology major or option. Courses which have not been included (special topics, readings courses, independent study) may be substituted for courses in the various areas, where appropriate and with approval of the student's advisor. New courses may be added to each of the four areas as appropriate, again with approval.

Social Institutions and Issues
SOC 102 Social Problems
SOC 209 Soc. of Life, Death, and Meaning
SOC 212 American Culture and Education
SOC 301 Sociology of Work
SOC 302 Sociology of Art
SOC 312 Deviant Behavior
SOC 340 Law and Society
SOC 342 Organization of Criminal Behavior
SOC 381 Social Impact Science/Tchnology

Social Inequality and Diversity
SOC/ANT 204 American Indian
SOC 305 Political Sociology
SOC 230 Black Identity & the Social World
SOC 330 Blacks and Whites in America
SOC 331 Race and Ethnicity
SOC 336 Women and Social Policy
SOC/ANT 337 Comparative Ethic Relations
SOC 356 Wealth, Status, Power in America
SOC/ANT 360 Struct. of Power & Inequality

Social Change
SOC 220 Social Change
SOC/ANT 227 Cultural Evolution
SOC 240 Dynamics of Community Org
SOC 246 Shaping the Human Environment
SOC/ANT 268 Environmental Issues
SOC 310 Social Movements
SOC/ANT 363 Environment & Development

Comparative Cultures and Global Issues
SOC 205 Indust. Society & Human Problems
SOC/ANT 226 Sociology of Africa
SOC/ANT 255 Peoples/Cultures of Europe
SOC/ANT 304 Third World Development
SOC 326 Latin America
ANT 327 Myth and Ritual
SOC/ANT 328 Cultural Ecology
SOC 329 Middle East
SOC/ANT 333 Peoples of South Asia
SOC 334 Sociology of Food
SOC/ANT 362 Peoples/Cultures of World

Majors are required to take 30 credits in the department, including 12 upper-division credits.

	Credits
SOC 101 Introduction to Sociology **OR** ANT 111 Cultural Anthropology **OR** SOC/ANT 113 Intro. to Social and Cultural Behavior	3
Methods Requirement SOC 206 Intro. to Research Methods **OR** SOC 401 Research Methods	3
Theory Requirement SOC 200 Intro. to Social Thought **OR** ANT 208 Intro. Anthropological Theory **OR** SOC 402 Sociological Theory **OR** ANT 405 Anthropological Theory **OR** SOC 358 Criminological Theory	3
Electives in Sociology or Anthropology	21
Total	**30**

Sociology Major
Option in Social Anthropology

Requirements

This option introduces students to the anthropological perspective: the physical and cultural evolution of the human species; prehistoric cultures, comparison of cultures from different parts of the world. Intended for students interested in a cross-cultural world perspective as a sound basis of a liberal arts education and/or as preparation for graduate school in anthropology for employment in a variety of fields.

Majors are required to take 30 credits in the department, including 12 upper-division credits.

	Credits
ANT 110 Intro. to Physical Anthropology	3
ANT 111 Intro. to Cultural Anthropology	3
ANT 261 Introduction to Archeology I	3
Theory requirement ANT 208 Intro. to Anthro. Theory **OR** ANT 405 Anthropological Theory **OR** SOC 200 Intro. to Social Thought **OR** SOC 358 Criminological Theory	3
Methods requirement SOC/ANT 206 Intro. Research Meth. **OR** SOC/ANT 401 Research Methods **OR** SOC/ANT 407 Field Inquiry	3
Electives in sociology or anthropology	15
Total	**30**

Sociology Major
Option in Criminal Justice

The program in criminal justice is an interdisciplinary concentration grounded in the liberal arts tradition. It draws on the full range of the university's resources to give students new opportunities to combine a university education with enhanced avenues for career advancement and public service.

Students wishing to chose this option should consult a faculty advisor in the Department of Sociology and Anthropology.

In addition to providing a university education for students who aspire to serve in the criminal justice system, UMass Dartmouth's program seeks to foster an understanding of the role of criminal justice systems in democratic societies. The intent of the training is to study the whole range of criminal justice activities and agencies which extend from the commission of criminal acts, the police and the courts, to probation, parole, and the social service system. Efforts have also been made to incorporate comparative and historical perspectives which focus on the processes which give rise to legal and extra-legal activities. Courses in counseling, as well as probation and parole, will form an integral part of the program.

All "pre-service" students will be required to take a one-semester internship. The student will be placed in a relevant position in the criminal justice system, such as a parole office, court, or correctional institution, and his or her experience will be supervised by a UMass Dartmouth faculty member.

Students with one or more years of working experience in the criminal justice system will substitute SOC 400 (Special Topics) or SOC 495 (Independent Study) for the Internship upon the recommendation of the Chairperson of the Department.

Requirements

		Credits
Required Core Courses		
SOC 101 ANT 111 SOC/ANT 113	Introduction to Sociology **OR** Introduction to Cultural Anthropology **OR** Introduction to Social/Cultural Behavior	3
SOC 200	Introduction to Social Though	3
SOC 206	Research Methods	3
SOC 358	Criminology	3
SOC 400	Special Topics	3
SOC 450	Internship	3
XXX	Introduction to Criminal Justice*	3
XXX	Criminal Procedure* **OR** Criminal Due Process*	3
Two courses from Group I		6
SOC 357	Justice and Society	
SOC 340	Law and Society	
SOC 310	Social Movements	
SOC 305	Political Sociology	
SOC 312	Deviant Behavior	
SOC 322	Constitutional Law	
SOC 323	Civil Liberties	
Two courses from Group II		6
SOC 342	Organization of Criminal Behavior	
PHL 326	Philosophy of Law	
PSY 406	Counseling	
SOC 203	Social Work	
PSY 202	Abnormal Psychology	
Two courses from Group III		6
SOC 331	Race and Ethnicity	
SOC 336	Women and Social Policy	
SOC 337	Comparative Ethnic Relations	
SOC 356	Wealth, Status, and Power	
SOC 338	Woman as Citizen	
PSC 339	Women and Public Policy	
	Total	**42**

Other courses may be substituted at the discretion of the Coordinator for the Criminal Justice Option

* Courses taken elsewhere and transferred to UMass Dartmouth, as approved by the Coordinator for the Criminal Justice Option

Sociology Major
Option in Social Services

The Social Service option provides students with the knowledge to confront the social issues and problems that social workers encounter in their work and to analyze them in a broad social, political and economic context. The option helps to develop the beginning skills necessary to provide services and includes the study of the functions and characteristics of the social services in our society; exploration of the personal and social values that influence our work with people in a helping relationship; practitioner roles and methods of social intervention; and practical "hands-on" experience working in social service agencies. The option is intended for students planning to enter the social service profession or graduate studies in social work.

Requirements

Majors are required to take 33 credits in the department, including 12 upper-division credits. Students select courses within the following clusters:

		Credits
Sociology, 9 credits selected from the following*		
SOC 202	Social Psychology	9
SOC 205	Industrial Society and Human Problems	
SOC 305	Political Sociology	
SOC 312	Deviant Behavior	
SOC 356	Wealth, Status and Power in America	
SOC/ANT 360	Structures of Power and Inequality	

Note: Most of these courses require an introductory sociology course as a prerequisite.

Psychology, 6 credits selected from the following*		
PSY 201	Child Psychology	6
PSY 202	Abnormal Psychology	
PSY 215	Adolescent Psychology	
PSY 323	Psychology of Adjustment	
PSY 330	Personality Theory	
PSY 406	Counseling I	

Note: PSY 101 is a prerequisite for all of these courses.

Issues of Race, Gender, and Ethnicity, 6 credits selected from the following*		
SOC/ANT 204	The American Indian	6
SOC 230	Black Identity and the Social World	
SOC 336	Women and Social Policy OR	
WMS 101	Introduction to Women's Studies	
WMS 110	Women in Contemporary Society	

Social Welfare and the Social Services — 9 credits		
SOC 203	Social Work Policy	9
SOC 355	Social Work Practice	
SOC 240	Dynamics of Community Organization	

Social Work Practice — 3 credits		
SOC 408	Social Service Internship	3

Note: Students must first complete SOC 203, 355, and 240.

Total **33**

*
In these clusters, course substitutions may be allowed with permission of the program coordinator.

Sociology Minor

A student can request entrance to the minor program in sociology after completing at least 54 credits with a cumulative grade point average of 2.0 and with at least a 2.5 grade point average in his/her major. Requests must be approved by the chairperson of the Sociology/Anthropology Department.

Requirements

The minor in sociology requires completion of at least 18 credits, of which 9 must be at the upper division level. Three courses (as in the major) will be taken which include Introductory level courses (SOC 101, ANT 111, or SOC/ANT 113), a theory course (SOC 200, ANT 208, SOC 402, or ANT 405), and a methods course (SOC 206 or SOC 401 or equivalent methods course in Economics, Political Science, or Psychology), plus three upper-division sociology or anthropology courses. All anthropology courses can count for the Sociology minor, as they do for the major.

Anthropology Minor

A student can request entrance to the minor program in anthropology after completing at least 54 credits with a cumulative grade point average of 2.0 and with a 2.5 grade point average in his/her major. Requests must be approved by the chairperson of the Sociology/Anthropology Department.

The department also offers an option in social anthropology for sociology majors.

Requirements

The minor in anthropology requires completion of at least 18 credits, of which 9 must be at the upper division level. Specifically, they will include ANT 111, either ANT 110 or ANT 261; ANT 208 or ANT 405; and three additional upper level courses Sociology/Anthropology or Anthropology electives.

Sociology/Anthropology Courses

Gen Ed Key

E Ethics and Social Responsibility
D Diversity
G Global Awareness

SOC 101 three credits **D**
Introduction to Sociology

A survey of the fundamental principles of sociology and the basic factors conditioning social behavior.

SOC 102 three credits
Social Problems

A survey of various social problems in the contemporary world. Special emphasis will be placed upon analysis of social problems in American society.

ANT 110 three credits
Introduction to Physical Anthropology

A survey of the fundamental concepts of the science of human beings. This course concentrates upon the physical evolution of the human species, the comparison of the behavior of currently existing primates, and interdisciplinary searches into topical questions such as the evolution and nature of aggression and/or hierarchy and dominance.

ANT 111 three credits **G**
Introduction to Cultural Anthropology

An introduction to the basic concepts of social and cultural anthropology. Readings emphasize the comparative study of societies at different levels of socio-cultural integration and from different areas of the world. This may include a brief introduction to physical anthropology and archaeology.

SOC 113 or ANT 113 three credits
Introduction to Social and Cultural Behavior

A combined introduction to Anthropology and Sociology, the comparative study of societies, their similarities and differences and how these are understood by social science.

SOC 159-199 three credits
Social Issues

Courses are offered on selected social issues as student and faculty interest indicate. May be offered under the ANT prefix where appropriate.

Recent offerings include:

SOC 160 three credits
Social and Cultural Evolution

SOC 164 three credits **E**
Environmental Issues

SOC 167 three credits
Social Issue: Human Environment

SOC 174 three credits
Portuguese/American Cultures

SOC 177 three credits **E**
Sex, Marriage, and the Family

SOC 200 three credits
Introduction to Sociological Thought
Prerequisite: SOC 101

An introduction to the enterprise of sociological theory. As such, it attempts to introduce students to the questions, problems, and intellectual tasks of theorizing about society and our social lives as well as to expose students to some of the most important competing ways in which previous social theorists have gone about this task.

SOC 202 three credits
Social Psychology

Some of the fundamental questions of social psychology—what is a human being? what are human relations? what is a group?—from the social perspective generated by psychoanalytic theory. The focus is on the relation of the individual to the group when both are in
the process of transformation. Readings from various social psychologists.

SOC 203 three credits
Social Welfare Policy
Prerequisite: SOC 101 or 102

Theoretical framework and cross-cultural perspective for understanding the role of the social services in our society. An

exploration of the history, politics and economics of our social welfare system will be undertaken through discussion, guest speakers and field work.

SOC 204 or ANT 204 three credits
The American Indian

A brief review of the prehistory of humans in the Americas. A study of the people and cultures of America before the arrival of Europeans. The interaction between various Indian groups and different European forces. Historical and social outcomes of that interaction. A focus on the status of Indian groups in the United States in recent times.

SOC 205 three credits
Industrial Society and Human Problems

An overview of modern society, particularly our own, with an emphasis on the problems and possibilities we face today.

SOC 206 or ANT 206 three credits
Introduction to Research Methods
Prerequisite: SOC 101 or ANT 111 or SOC/ ANT 113

An introduction to the concepts and methodology of social science research.

ANT 208 three credits
Introduction to Anthropological Theory
Prerequisite: ANT 111

A historical analytical and current review of the anthropological perspective. Several themes basic to anthropological thinking are compared including, holism, systems and processes, folk versus analytical perspective, and case studies. The systematic nature of anthropological inquiry with testing of findings, theories, laws, generalizations, and modes of research and interpretation will be noted in the reading of original sources.

SOC 209 three credits
Sociology of Life, Death, and Meaning
An exploration of the exclusion of the organic—birth, death, the body, committed relationships, family, community, and nature—from work or technical performance in industrial institutions.

SOC 210 or ANT 210 three credits
Culture and Personality
Prerequisites: SOC 101 or 113 or ANT 111 and PHY 101

An analysis of personality development with particular stress upon the cultural determinants of identity, character, and motivation. The thesis of national character formation as well as socio-cultural variations in psycho-pathology and normalcy will be examined.

SOC 217 three credits
Societies of the Future

Introduction to the growing world crises of resource and energy scarcity and its future consequences for world civilization. Explanation of possible cultural transformations and future social orders.

SOC 220 three credits
Social Change
Prerequisite: SOC 101

Analysis of the processes of social change. Why does social change occur? Attention is given to both economic factors and conscious movements for social change.

SOC 226 or ANT 226 three credits
Sociology of Africa
A survey of change and conflict in African society, historically and at present. Particular attention will be paid to the effects of colonialism and African resistance to it.

SOC 227 or ANT 227 three credits
Cultural Evolution
Prerequisite: SOC 101 or ANT 111 or SOC 113 or ANT 113

The evolution of human societies from prehistoric to modern times. Focus will be on the interaction between the development of technological forces and changes in social relations and institutions.

SOC 228 (WMS 228) three credits
Sex Roles and Sexuality in American Society
Prerequisite: Permission of instructor

The changing definitions of the roles of men and women in American society from our own experience and from social, historical, and biological perspectives. The course covers the development of male and female in the evolutionary system; human sexuality; cross-cultural sexual identities; images of male and female in American literature, movies, and the popular imagination; socialization and the development of sexual identity; problems of courtship and intimacy.

SOC 230 three credits
Black Identity and the Social World

The course examines the African past through literature, the survival techniques which Blacks developed in order to survive in an alien world, and the collective identity of Black people at the present time. This course is especially designed for Black students and White students who are concerned with Black heritage. Cross-listed as AAS 230.

SOC 232 or ANT 232 three credits D
Portuguese in the Americas

A sociological examination of the Portuguese experience in the U.S. and Brazil with focus on immigration, inter-ethnic relations, problems of adjustment and opportunities in the two countries.

SOC 249 or ANT 249 three credits
The World of Work
Prerequisites: One introductory social science or English course and ENL 101,102

An examination of the personal and social importance of work in human society through literary, sociological, and anthropological texts. These issues will be explored. The meaning, value, and organization of work in nonindustrial and industrial societies, the effects of value systems on the work process; the problems surrounding work in contemporary America (gender, age, race, class, worker/management relations), and the future of work. Cross-listed as ENL 249 and LST 249.

SOC 251 three credits
Group Processes
Prerequisite: Permission of instructor required. Interview with student required.

The theory of human potential, distress, and recovery, concerned with how to reevaluate one's experience and life history from a powerful positive perspective. The class will use new rules of communication which allow equal time for everyone participating, stress the necessity both of sympathetic attention and spontaneous self-expression, and emphasize ways of communicating feelings that are repressed in everyday social relations.

SOC 252 three credits
Analyzing Racism in America
Prerequisite: SOC 101

Protest movements and the roles individuals, more particularly Blacks, have played in battling oppression and injustice.

SOC 253 three credits
Urban Sociology
Prerequisite: SOC 101

An ecological and social psychological analysis of urban life in the United States. Urban institutions and their social relations with the urban community are given special attention. Cross-listed as AAS 253.

ANT 261 three credits
Introduction to Method and Theory in Archaeology

An introduction to the principles of method and theory of modern American archaeology.

ANT 262 three credits **G**
Introduction to World Prehistory

An introduction to archaeological documentation of prehistoric socio-political organization. Emphasis on the development of state levels of social organization in an evolutionary perspective.

SOC 268 or ANT 268 three credits
Environmental Issues

Introduction to controversial social issues surrounding environmental problems. The course addresses how modern society is creating and responding to current environmental trends and gives social ecological perspective on our human prospect.

SOC 298 or ANT 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

SOC 300 or ANT 300 three credits
Lesbian, Gay, and Bisexual Identity and Culture

Lesbian, gay, bisexual, and transexual identity, history, and culture, sexual roles, homophobia, heterosexism, the gay liberation movement, and cross-cultural experiences will be examined. Family, health, religious, economic, racial, political and legal issues will be explored.

SOC 301 three credits
The Sociology of Work
Prerequisite: SOC 101 or ANT 111 or SOC/ ANT 113

The analysis of work in modern society, and how, historically, labor/management relations have shaped our lives. Cross-listed as LST 301.

SOC 302 three credits
The Sociology of Art I
Prerequisite: either SOC 101, SOC 111, SOC/ANT 113, or History of Art; or permission of instructor

The relationship between society and art and artists. Various problems will be taken up concerning the recruitment and careers of artists and the effects that these have had on their artistic work.

SOC 303 or ANT 303 three credits
Family and Kinship: An Interdisciplinary Approach
Prerequisite: A social science course

A study of the functions and stresses of the family in complex society. A comparison of family behavior in folk and urban cultures, a study of bio-social life (erotic behavior, child care, and death) using the perspective of several disciplines-psycho-analysis, sociology, and anthropology. Speculations on the future of the family.

SOC 304 or ANT 304 three credits
Third World Development
Prerequisite: SOC 101, 111, or 113

A study of the "Third World" — its political economy and roots in world history and international relations. The focus will be on understanding the sources of underdevelopment and the possibilities for development.

SOC 305 three credits
Political Sociology
Prerequisites: SOC 101, SOC/ANT 113, PSC 101, 102; or permission of instructor

An exploration of sociological perspectives on the study of power relationships, political communities, political processes, and institutions.

SOC 306 or ANT 306 three credits
Cultures of Contemporary Portugal

The cultures of contemporary Portugal. We will draw on the work of anthropologists, sociologists, and historians and focus on key issues including changes in traditional roles of men and women, Portuguese emigration and its effect on Portuguese society, patterns of ritual and religion, and national citizenship.

SOC 307 three credits
Sociology of Conflict and War
Prerequisite: SOC 101 or permission of instructor

An exploration of theories that humans are by nature aggressive or cooperative beings; of the nature, sources and dynamics of social conflict generally and war in particular; and, of possible alternatives to war.

SOC 308 three credits
Sociology of Religion
Prerequisites: SOC 101 or SOC/ANT 113; and upper-division status

Comparative sociological analysis of religious movements in industrial and non-industrial societies. The interplay between religion and social structure is examined. The church-sect typology and the institutionalizing of religious belief systems will be examined. Consideration will also be given to the influence of religious creeds upon patterns of thought and action and on socio-cultural change.

SOC 309 or ANT 309 three credits
Readings in Sociological and Anthropological Literature
Prerequisite: Junior or senior standing.

Reading and writing on specific sociological and anthropological topics normally not included in the curriculum. Students will work on these topics under the close supervision of individual instructors. Students are limited to one such reading course per semester

SOC 310 three credits
Social Movements I
Prerequisite: SOC 101 or permission of instructor

A sociological analysis of the origin and development of social movements with an emphasis on detailed study of particular social movements

SOC 312 three credits
Deviant Behavior
Prerequisite: SOC 101, junior or senior standing

Review of theory and research with emphasis on their implications for a general theory of deviant behavior. Sociological knowledge will be applied to the analysis of selected topics such as organized crime and drug addiction. Social factors and influences in deviant conduct are given heavy stress. Sociological analysis of the agencies of control will be included.

SOC 314 three credits
Complex Organizations
Prerequisite: SOC 101

The workings of large formal organizations such as universities, hospitals, prisons, and government organizations. Attention will be given to the social interactions within the organizations, and especially how organizations maximize efficiency given their bureaucratic structures.

SOC 318 three credits
Russia and Eastern Europe

A survey of the societies of Russia and the former Soviet Union, as well as formerly socialist Eastern Europe, with an emphasis on recent social change and life today in these countries.

SOC 320 or ANT 320 three credits
Junior Seminar
Prerequisite: For juniors only; permission of instructor

Students will discuss and write papers on aspects of a subject chosen for the semester.

SOC 321 or ANT 321 three credits
Comparative Sociology of the Community
Prerequisite: SOC 101 or ANT 110, 111, or 113

An examination of various community forms with the aim of clarifying the nature of village, town and city forms in American society.

SOC 323 or ANT 323 three credits
Morality and Society

Inquiry into morality and its role in society and social change. This course will consider the origins and evolution of morality, looking at similarities and difference in the moral codes of different cultures, as well as of different periods of Western history. Attention will be given to sources of change and conflict involving moral issues in modern society.

SOC 324 or ANT 324 three credits
Women in Contemporary Society

The roles and status of women in contemporary societies are examined using an historical and comparative approach. The course integrates theory of sexual inequality and its relation to other forms of social inequality and empirical analysis of the actual conditions of women. Women's participation in social movements in the U.S. and Third World countries is addressed as part of the analysis of the changing roles and statuses of women. Cross-listed as WMS 324.

SOC 325 or ANT 325 three credits
Sex, Marriage and Family

A survey of basic human patterns of bonding and reproduction in different cultures, through human evolution to modern times, focusing on an exploration of issues surrounding sex, marriage and family in contemporary society.

SOC 326 three credits
Latin America

A survey of the region with the emphasis on the areas where crisis, war, and U.S. involvement exist.

ANT 327 three credits
Myth and Ritual
Prerequisite: ANT 111 or 113

Exploration of the significance of myth and ritual and the history of their study. Myths and rituals of a world-wide sample are analyzed from functional, structural, and symbolic points of view.

SOC 328 or ANT 328 three credits
Cultural Ecology

The study of culture and society from an anthropological and ecological approach, focusing on the interaction between human societies and their natural environment.

SOC 329 three credits
The Middle East

A survey of the region with an emphasis on the areas where crisis, war, and American involvement exist.

SOC 330 three credits
Blacks and Whites in America

A multimedia course focusing on the social and cultural similarities and differences between Blacks and Whites in America. National survey data, field studies, biographies, autobiographies along with novels and films are included among the materials analyzed. Students will also be taught the fundamentals of survey data analysis using personal computers.

SOC 331 three credits
Race and Ethnicity
Prerequisite: SOC 101 or 111 or 113

A study of the concepts of "race" and "ethnic group" and the role these concepts play in social interaction and social differentiation.

SOC 332 or ANT 332 three credits
Portuguese in the Americas

The history, culture, and experiences of Portuguese who have migrated to the Americas. Published research will be examined and class research projects will be assigned in the local community. Students will contribute to a web page on student research projects.

SOC 333 or ANT 333 three credits
Peoples of South Asia
Prerequisite: ANT 111 or SOC/ANT 113

Introduction to the variety of social systems found in South Asia, including India, Pakistan, Tibet, Nepal and Ceylon. The contrasts between wheat and rice farming areas, tribal and peasant societies, and highland and lowland peoples will be examined. The effects of industrialization will be considered. The value systems of Buddhism and Hinduism will be introduced.

SOC 334 three credits
Sociology of Food

A look at ancient and modern food production and its environmental impact. Diet and nutrition; population pressure and hunger; the politics of food; and, modern food processing and its implications are all subjects of study.

SOC 335 three credits
Social Policy
Prerequisite: SOC 101 or 203

An analysis of the relationship between social needs and societal response with an examination of the effectiveness of current policies in meeting human needs. The policies selected for analysis will be programs and provisions directed toward a specific population, e.g. elderly, women, etc. The policies to be studied will focus on a particular substantive area and may change with each semester that the course is offered.

SOC 336 three credits
Women and Social Policy

Family policy issues in the U.S. such as childcare, family leave, job equity, and marriage and family relationships. U.S. public policy is compared with that of other countries. Cross-listed as WMS 336.

SOC 337 or ANT 337 three credits **D**
Comparative Ethnic Relations

A comparative analysis of interracial and interethnic relations in various areas of the world including the U.S., Latin America, Africa, and Europe. An examination of the causes of interethnic conflict, assimilation, ethnic solidarity, and changes in ethnic identity.

SOC 340 three credits
Law and Society

Investigation of problems in the sociology of law, including lawmaking processes; administration justice and correctional systems. Comparative analysis of legal systems and their administration.

SOC 341 three credits
Community Organizing

An analysis of the theory and practice of community organizing with particular emphasis on the development of social action and community development techniques on the grass-roots level. This course will be conducted as a seminar with student participation expected in class discussions. In addition, mini-lectures, field simulations, role-playing, guest speakers, and field observations will be utilized. (Formerly SOC 240)

SOC 342 three credits
Organization of Criminal Behavior
Prerequisite: SOC 101 or equivalent

Sociological approaches to the study of crime typologies. Criminal behavior is best explained when broken down into types. After discussing the construction of types of crimes, there will be an exploration of the systems within which criminal behavior develops.

SOC 345 or ANT 345 three credits
Human Evolution

A systematic and multidisciplinary approach to the origin and evolution of the human species from its primate ancestors. Topics include the evolutionary relationships of the various groups of modern primates, the divergence and physical evolution of the human lineage and origin of modern Homo Sapiens. In addition an attempt is made to correlate our knowledge of the behavior of the nonhuman primates, ethnography, fossils, and archeology so as to gain insights into the origins and evolution of human social behavior and our distinctive cultural adaptation.

SOC 349 (PSC 349) three credits
The Computer and Data Analysis
Prerequisites: Social Science major, upper-division standing, or permission of instructor

An introduction to basic statistics and the use of the computer for data analysis. Students learn computer applications with the Statistical Package for the Social Sciences (SPSX) on the University mainframe computer. Computer work is closely supervised and conducted as a tutorial.

SOC 350 or ANT 350 three credits
Readings in Sociological and Anthropological Literature I
Prerequisite: Permission of instructor

Directed readings and analysis in selected sociological topics. Cross-listed as WMS 350 with appropriate topic.

SOC 351 or ANT 351 three credits
Readings in Sociological and Anthropological Literature II
Prerequisite: Permission of instructor

Directed readings and analysis in selected sociological topics.

SOC 352 or ANT 352 three credits
Readings in Sociological and Anthropological Literature III
Prerequisite: Permission of instructor

Directed readings and analysis in selected sociological topics.

SOC 353 three credits
Readings in Sociological Literature IV
Prerequisite: Permission of instructor

Directed readings and analysis in selected sociological topics.

SOC 355 three credits
Social Work Practice
Prerequisite: SOC 203

The knowledge, values and skills that underlie social work practice. We will consider the roles that social workers assume, the settings in which they work and the methods of intervention that are used in working with individual, groups, and communities. Issues related to cross-cultural social work will also be explored.

SOC 356 three credits
Wealth, Status, and Power in America

The study of the various ways in which different societies assign their members to higher and lower positions of prestige, power, and possessions. A sociological analysis of the ways in which a person's stratified rank influences personality and life-opportunities in society.

SOC 357 three credits
Justice and Society
Prerequisites: SOC 101 or equivalent and junior status; or permission of instructor

An introduction to the wider cultural and legal contexts of the criminal justice system. The course draws on the sociology of law and the police, as well as the functioning of the courts in order to understand the concept of law, the notion of the "rule of law," due process, and the role of constraint in law enforcement in a democratic society.

SOC 358 three credits
Criminological Theory
Prerequisites: SOC 101 or equivalent and upper-division standing

A review of the principal forms of explanation in the social sciences, including environmental, psycho-social, economic, and sociological. Application of these approaches is extended to various forms of behavior including crime and delinquency through the work of Durkheim, Lombroso, Freud, Merton, Sutherland, Lemert, Chambliss, and others.

SOC 360 or ANT 360 three credits
Structures of Power and Inequality
Prerequisite: SOC 101 or ANT 111 or SOC/ ANT 113

The many bases of inequality, including the artificial distinctions of age, sex, race, and hereditary position in a family line, occupation, ethnicity, and nationality. Talents and temperaments are often specialized to one sex, one class, one caste, etc. This course will explore what bases of inequality (whether one or many) are found within a number of social systems. These alternate social forms of inequality will be compared.

SOC 361 or ANT 361 three credits
Peoples and Cultures of Europe
Prerequisite: SOC 101 or ANT 111 or SOC/ ANT 113

An examination of selected societies of Europe from an anthropological perspective, with special attention paid to rural-urban relations and to processes of transformation and development. An attempt will also be made to account for the similarities and differences of the peoples and societies studied.

SOC 362 or ANT 362 three credits
Peoples and Cultures of the World
Prerequisite: SOC 101 or ANT 111 or SOC/ ANT 113

Classic ethnographies and films of peoples in the pre-Columbian Americas, Africa, Melanesia and the Orient. The course features cross cultural exploration through the works of anthropologists like Malinowski, Benedict, Evans-Pritchard and Levi-Strauss and of indigenous peoples like Black Elk. The anthropological concepts and methods of the authors are contrast and effects of different levels of development on lifestyles are considered.

SOC 363 or ANT 363 three credits **G**
Environment and Development
Prerequisite: SOC 101 or ANT 111 or SOC/ ANT 113

A search for social change which will improve conditions for all and be beneficial to the long-run survival and future of the planet and our human species. The course discusses action strategies for constructive group living by self-reliant participation in productive activities on local levels and beyond.

SOC 369 or ANT 369 three credits
Visual Symbols and Myth

A study of the underlying structure and content of visual symbols, myth, and ritual, and an analysis of the social implications of these systems.

SOC 371 or ANT 371 three credits
People's Movements
Prerequisite: SOC 101, ANT 111, or SOC/ ANT 113

Introduction to grassroots-level actions people have taken to improve their conditions. A broad range of movements which have had varying degrees of success, from civil rights and social justice to peace and environmental movements, are analyzed to reveal models of action from the past and present and possible alternatives for the future as part of total local and global complexes.

SOC 372 or ANT 372 three credits
Peace Studies
Prerequisite: SOC 101, ANT 111, or SOC/ ANT 113

A study of peaceful, non-violent societies and observation of the processes and conditions that shape relations of peace and non-violence. The course presents evidence that our human potential for peaceful relationships is strong and is a long-standing part of our human behavior. Studies of peace suggest we have the ability to find new approaches to the attainment of peace in our own violent and warlike time.

SOC 381 three credits
Social Impact of Science and Technology

A look at the scientific and technological world views: the claim that tools are value-free, that knowledge (software, etc.) should be property; that natural and social reality should be quantified.

SOC 400 three credits
Special Topic
Prerequisite: Open to seniors electing the Criminal Justice option, or by permission of instructor

Selected topics such as juvenile delinquency, probation and parole, white collar crime, and related topics in criminal justice will be offered. May be repeated with change content.

SOC 401 or ANT 401 three credits
Research Methods
Prerequisites: SOC 101 or ANT 111 or SOC 113 or ANT 113; and one advanced course in a social science.

Language and social inquiry; issues related to ideas of knowing, explaining, understanding, confirming, etc; valuative and effective elements in inquiry; empirical testability of propositions; quantitative and qualitative procedures of data collection and analysis; study of example cases.

SOC 402 three credits
Sociological Theory
Prerequisite: SOC 101 or SOC 113 or ANT 113; and one advanced sociology course.

The synthesizing and integrative functions of theory in the sociological enterprise. The course seeks to awaken an awareness of the nature and role of concepts in theory

construction, and to highlight the gains and losses which accrue in all linguistic statements about the world. The work of Marx, Durkheim, Weber, Veblen, Sorokin, G.H. Mead, and R.K. Merton are given special attention, both as pioneering examples of theoretical innovation and as substantive points of departure for future inquiry.

ANT 405 three credits
Anthropological Theory
Prerequisite: ANT 111 or ANT 113

An analysis of the major theoretical orientations of anthropologists toward the two central anthropological questions: the nature and origin of the human species and the nature and origin of culture and civilization.

SOC 406 three credits
Sociology of Art II

Interrelationships between art making and the social context in which art is made. The course will explore theoretical and methodological questions related to sociology of art and will then focus upon one period or problem, e.g., 19th century artistic responses to the rise of industrialization.

SOC 407 or ANT 407 three or six credits
Field Inquiry
Prerequisites: SOC 101 or ANT 111, or SOC 113 or ANT 113; and one advanced course in social science; and permission of instructor.

Research problem formulation, study design, and the gathering and analysis of data in Sociology and Anthropology, with primary emphasis upon field work. In addition to reading and seminar discussions, each student will participate throughout the seminar in supervised field inquiry. Interested students should talk with the instructor about field work possibilities and arrangements. Upon the approval of the instructor, students may register for either three or six semester hours in a single semester or three semester hours in each of two successive semesters.

SOC 408 three credits
Social Service Internship
Prerequisites: SOC 203, 355

This course will provide students with the opportunity to integrate social work theory with practice. Students will intern with an agency/organization in the community or on campus and will meet as a seminar to analyze and reflect upon their experiences and to further develop skills and knowledge about the social services in our society.

SOC 420 or ANT 420 three credits
Senior Seminar
Prerequisites: For seniors only; permission of instructor required

Students will discuss and write papers on aspects of a subject chosen for the semester.

SOC 430 three credits
Seminar on Advanced Problems in Sociological Theory I
Prerequisite: Permission of instructor

Selected theoretical problems, theorists or schools of thought examined in depth.

SOC 431 three credits
Seminar on Advanced Problems in Sociological Theory II
Prerequisite: Permission of instructor

Selected theoretical problems, theorists or schools of thought examined in depth.

SOC 450 three credits
Internship
Prerequisite: Senior sociology major or permission of instructor

Students registering for this course are placed in relevant positions in the criminal justice system, such as a parole office, court, or correctional facility, where their work will be supervised by an on-site sponsor as well as Departmental advisor.

SOC 492 or ANT 492 variable credit
Honors Research

Research project under independent faculty supervision, by permission.

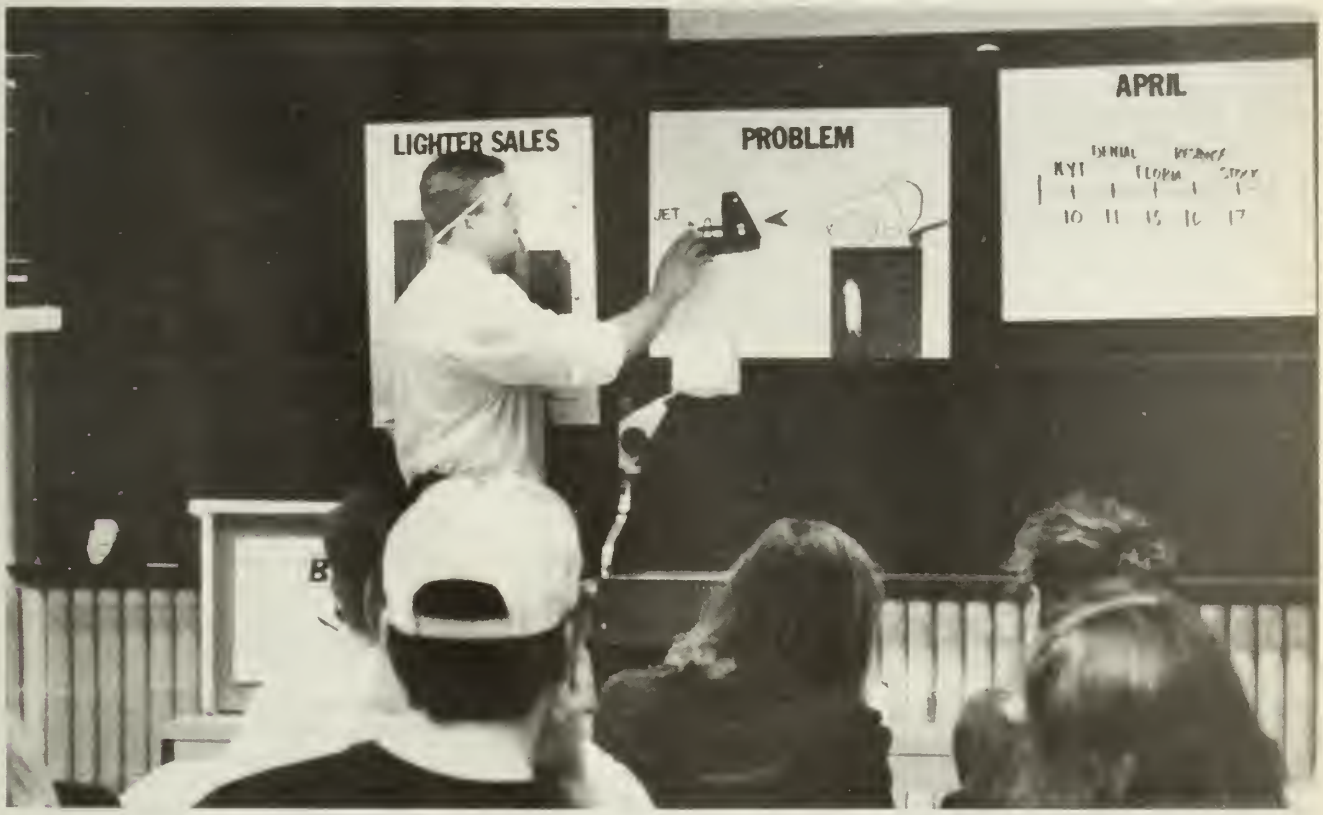
SOC 495 or ANT 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

SOC 196, 296, 396, 496 or ANT 196, 296, 396, 496 variable credit
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Earle P. Charlton College of Business



The Earle P. Charlton College of Business serves three distinct and important stakeholders: undergraduate and graduate majors, students from other academic units in the university, and the broader professional and business community.

The Charlton College offers five undergraduate programs in business, all leading to the Bachelor of Science degree. These programs are designed to prepare the graduate for careers in administration, research, and teaching; or for graduate study.

The College also offers a minor in Business Administration that helps non-College majors acquire an understanding of business essentials.

Students in the Charlton College of Business engage in projects and case studies that involve all areas of business–marketing, management, finance, systems development, and accounting. Each student's studies combine real breadth–through courses in arts, humanities, sciences, and social sciences; foundation knowledge in accounting, behavioral science, economics, and mathematics and statistics; oral and written communication–with the advanced specialization of a major field. Students will also gain an understanding of ethical and global issues; political, social, legal, environmental, and technological issues; and the impact of diversity on organizations.

College Mission Statement

The Earle P. Charlton College of Business provides a strong basic business education that challenges students and meets the needs of the southeastern Massachusetts business community and beyond. Grounded in excellent general education programs, the college provides quality undergraduate programs in Accounting, Business Information Systems, Finance, Management, and Marketing. The MBA program provides continuing leadership education for the region and beyond. The college encourages students to be lifelong learners through faculty commitment to scholarly endeavor and active involvement in the business profession and community.

The purpose of our business programs is to instill in our students a knowledge of the best business practices; ethical questions; and the influence of environmental, legal and regulatory, political, social, global, and technological factors on the success of organizational activities.

Earle P. Charlton

At its February 1997 meeting, the University of Massachusetts Board of Trustees voted to name the College of Business at UMass Dartmouth the Earle P. Charlton College of Business. The name honors Earle P. Charlton, a co-founder of the F. W. Woolworth Company, who began his retail empire in 1890 in Fall River, and acknowledges a substantial gift to the College by the Charlton Charitable Trust.

In the words of his grandson, Earle P. Charlton II, "This is the American Dream. My grandfather started with nothing and built an empire of 53 stores across New England to the Pacific Coast and in Canada. He was an inspiration to me, my hero. He wanted to make a difference in the world."

The gift acknowledges a strong belief in the value of public education in our society and in the importance of private support for it. His grandfather "never had the opportunity to go to college," explains Earle P. Charlton II, yet "I know he would be extremely proud to give to these students . . . the opportunity to get the education he missed."

Accreditation

The Charlton College of Business is a member of the American Assembly of Collegiate Schools of Business and engaged in the initial accreditation process.

Graduate Program

An M.B.A. program is offered by the Earle P. Charlton College of Business. See the *Graduate Catalogue* for graduate general and program requirements.

General Requirements for Undergraduate Programs

The College's five business majors focus on interrelations among business enterprise, the economy, and society. Students develop skills in the use of quantitative data and theoretical tools in analyzing problems related to business and the economy. They are also assisted in developing the skills and intellectual capacities which foster mature and competent judgement.

Students enrolled as business majors complete a common program of study during the first two years. This lower-division program emphasizes a general education background with courses in the humanities, mathematics, and both social and natural sciences. The objective of this approach is to provide a foundation of work in those academic areas necessary for the appropriate combination of descriptive and analytical skill development to the study of business.

The Earle P. Charlton College of Business is preparing for accreditation by American Assembly of Collegiate Schools of Business.

The following pages reflect a substantial revision of the undergraduate curriculum in Accounting, Business Information Systems, Finance, Management, and Marketing. They apply in total to the students graduating with the class of 2000. Each student is required to complete a core of courses referred to as a common body of knowledge. The remaining program will complete the requirements in the student's selected major leading to the appropriate degree. In addition, students graduating with the class of 2002 must also comply with the UMass Dartmouth general education requirement.

General Education and Core Business Requirements

Each business student is required to complete a sequence of courses called the Core Business Requirements. In addition, each student who will graduate with the class of 2002 must complete the UMass Dartmouth general education requirement; others are held to the college's distribution requirements. Students take 60 credits of their graduation requirements from outside the College of Business. The remaining 60 credits are in courses from within the College, making up the Core Business Requirements as well as the student's Major Requirements.

The majors in the College of Business meet the General Education requirements in the following manner (some of the following statements are still in process of receiving committee review and approval):

Tier 1 Information and Computer Literacy; Writing Skills ENL 101, 102

I Information & Computer Literacy (Tier II) BIS 101; MGT 210, 211; ACT 212; BIS 315/ACT 355

W Writing Intensive ENL 265 (Tier II)

O Oral Skills MGT 311

M Mathematics MTH 107

E Ethics 12 hours within the Core Business Requirement (integrated within BIS 101; ACT 211,212; MKT 211; MGT 311; MGT 312; MGT 345; BIS 315/ACT 355; FIN 312; and MGT 490)

C Cultural and Artistic Literacy 9 credits from Gen Ed list

S Natural Science and Technology 6 credits, from Gen Ed list

G Global Awareness 3 credits, from Gen Ed list

D Diversity 3 credits from Gen Ed list

Students graduating with classes *earlier than 2002* (for example, some transfer students) will meet the set of requirements called the "Humanities/Social Science Requirements," which were in effect for previous graduating classes.

Dual Major Requirements for the College of Business

All students who select a dual major within the College of Business must complete a minimum of 24 credit hours for the second business major. This will bring the graduation requirement to at least 144 credit hours for dual majors.

Courses offered outside the Business Curriculum

		Credits
ENL 101, 102	Critical Writing & Reading I & II	6
MTH 107	Elements of College Math Enhanced	3
ECO 231, 232	Princ. of Micro/Macroeconomics	6
ENL 265	Business Communications	3
MGT 210, 211	Business Statistics I & II	6
	Cultural and Artistic Literacy	9
	Non-Business Global Awareness	3
	Non-Business Diversity	3
	Natural Science/Technology	6
	Social science elective	3
	Non-business electives	12

Core Business Requirement

BIS 101	The Business Organization	3
ACT 211, 212	Principles of Accounting I & II	6
MKT 211	Principles of Marketing	3
MGT 311	Organizational Behavior	3
MGT 312	Legal Framework of Business	3
FIN 312	Financial Management	3
BIS 315	Business Information Systems (Accounting majors take ACT 355 Accounting Info. Systems)	3
MGT 333	Quantitative Business Analysis	3
MGT 345	Operations Management	3
MGT 490	Strategic Management and Policy Formulation	3

Transfer of Community and Junior College Credit

Generally, lower-level business course credits (first and second year courses) can be transferred from junior and community colleges, assuming the course work is comparable to that offered at UMass Dartmouth. All transfer credits to apply toward the degree are given at the discretion of the College.

The following courses from Bristol Community College will be accepted as equivalent to the following UMass Dartmouth courses:

Bristol Community College:		UMass Dartmouth:	
MAN 11	Principle of Management	MGT 311	Organizational Behavior
ACC 11, 12	Accounting I & II	ACT 211, 212	Accounting I & II
BUS 51	Business Law	MGT 312	Legal Framework Business
BUS 53	Corporation Finance	FIN 312	Financial Management
MAR 11	Principles of Marketing	MKT 211	Principles of Marketing
CPR 11/CIS 11	Intro. to Data Processing	BIS 101	Business Organization

Comparable courses from other community colleges will also be accepted as equivalent to these UMass Dartmouth courses.

Transfer students from community colleges must comply with the university requirement to complete at least 60 credits at UMass Dartmouth. Furthermore, a student needs to complete at least 30 credits of upper-level business courses at UMass Dartmouth. Business elective courses taken at the 100 or 200 level cannot be transferred for upper-division business elective credit, nor can they be transferred as non-business electives.

Business Administration Minor

Center **O**f **R**etailing **E**ntrepreneurship & **E**xcellence **(CORE²)**

CORE² cooperative learning opportunities are available to students in the Charlton College of Business who are academically qualified, have the recommendation of faculty advisors, meet the hiring standards of the various companies; and who ask to join **CORE²**. At the end of the sophomore year, eligible students may be invited to join **CORE²** as early as the summer immediately following the sophomore year. Students do not take classes while they are on a co-op work assignment.

CORE² students are assigned to faculty coordinators. Participants are classified as full-time students during the work sessions, thus maintaining eligibility for financial aid and on-campus housing. A GPA of 2.5 or higher must be maintained to remain in the **CORE²** program.

McDonald's Corporation offers a number of qualified students the opportunity to participate in the UMass Dartmouth McDonald's Co-op Scholarship Program. Selected McDonald's Co-op scholars who also complete a course of training and study offered by McDonald's (and coordinated by the Charleton College) are eligible to receive a Certificate in Restaurant Management from UMass Dartmouth.

The Minor in Business Administration is designed for non-College of Business students whose objective is to acquire an understanding of business essentials to supplement their own area of expertise. By selecting a Minor in Business Administration, a non-business major can open both educational and career opportunities in business as a secondary area of study. For the non-business student who is planning on entering a Masters' of Business Administration program, the completion of the Minor in Business administration would satisfy part of the foundation requirements of the UMass Dartmouth MBA program, as well as MBA programs offered at other institutions.

Coordinator

Richard F. Golen
Assistant Dean of Undergraduate Programs
Charlton College of Business

Admission to the Minor

Any undergraduate degree candidate, at UMass Dartmouth, with a declared major other than one in the College of Business, who has completed a minimum of 54 credits toward a baccalaureate degree, and has at least a 2.500 overall GPA will be admitted to the Minor. Applications for admission should be made to Richard F. Golen, Assistant Dean for Undergraduate Programs, Charlton College of Business.

Requirements (as of Fall 1998)

Complete the following core courses		Credits	
MKT 211	Principles of Marketing	3	
ECO 231	Principles of Microeconomics	3	
ACT 211	Principles of Accounting I	3	
MGT 311	Organizational Behavior	3	
Select three courses from the following		9	Prerequisites
ACT 212	Principles of Accounting II		ACT 211
BIS 315	Information Systems		
FIN 312	Business Finance		ACT 212, ECO 231
MGT 365	Managing People: Theory and Practice		
MGT 312	Legal Framework of Business		
MGT 345	Operations Management		MGT 333
	Total:	**21**	

At least five of these courses must be completed at UMass Dartmouth.

Course descriptions will be found in the appropriate sections of the *Catalogue*.

Certain courses may require prerequisites, and students must meet the prerequisites prior to enrolling in any course within the minor.

Accounting and Finance

The Department of Accounting and Finance offers two major programs leading to the Bachelor of Science degree. The Accounting program is designed to prepare graduates for a variety of careers in accounting through a curriculum that emphasizes technical accounting knowledge and the development of analytical, problem solving and computer skills. The Finance program is designed to produce graduates who can apply financial concepts and analytical skills for use in investment analysis and financial planning.

Faculty and Fields of Interest

Michael H. Anderson financial institutions, corporate finance, international finance

C. Richard Baker financial accounting and auditing

Beryl Barkman accounting, accounting education

Bonita A. Daly accounting

Raymond Jackson (coordinator for Finance) finance, financial planning

Frederick Jones (chairperson) information systems, financial accounting

Jeanne H. LaFond accounting theory and taxation

Helen LaFrancois accounting, taxation

Lawrence B. Logan corporate accounting

Kooros Maskooki corporate finance, international finance

Trib Puri corporate finance, international finance

K. Raghunandan auditing, financial accounting

D.V. Rama accounting information systems, auditing

J. Roland Richard accounting, auditing

Accounting Major

BS degree

The accounting profession plays an essential role in a modern economy by providing a flow of financial information necessary for problem solving and decision-making by managers within an organization and by investors, leaders, and government agencies. Managers rely on accountants for financial planning, budgeting, and interpretation of financial results. Students learn how to provide information that is relevant and appropriate for a variety of decisions that managers must make.

Investors, lenders, government agencies, and other external parties also rely on accountants and auditors to provide accurate and reliable financial statements about an organization. Students learn how to apply accounting concepts, standards, and regulations in preparing, auditing, and analyzing financial statements.

Because accounting is an information system, there is substantial emphasis in the program on computer and information technology skills, including the use of accounting, spreadsheet, and database applications as well as the use of technology for accounting and tax research.

The accounting program provides a strong foundation for pursuit of a career in private or public accounting, or for further education in graduate school. In private accounting, students may prepare for certification as a Certified Management Accountant (CMA). Preparation for a career as a Certified Public Accountant (CPA) has been enhanced by state regulations that now require 150 hours of education prior to certification. Students interested in a public accounting career should talk with a faculty member to consider ways of achieving the 150-hour requirement.

Requirements

		Credits
General Requirements — Years One and Two		**57**
ENL 101, 102	Critical Writing and Reading I, II	6
MTH 107	Elements of College Math Enhanced	3
MGT 210, 211	Business Statistics I, II	6
BIS 101	The Business Organization	3
ENL 265	Business Communications	3
ECO 231, 232	Principles of Micro/Macroeconomics	6
ACT 211, 212	Principles of Accounting I, II	6
	Cult./artistic literacy	9
	Non-business global awareness	3
	Non-business diversity	3
	Natural science/technology	6
	Social science elective	3
Core Business Requirements		**24**
MKT 211	Principles of Marketing	3
MGT 311	Organizational Behavior	3
ACT 355	Accounting Information Systems	3
MGT 333	Quantitative Business Analysis	3
FIN 312	Financial Management	3
MGT 312	Legal Framework of Business	3
MGT 345	Operations Management	3
MGT 490	Strategic Management and Policy Formulation	3
Core Accounting Requirements		**21**
ACT 311, 312	Intermediate Accounting I, II	6
ACT 351	Cost Accounting	3
ACT 401	Auditing	3
ACT 411	Taxation	3
ACT 452	Special Topics in Accounting	3
ACT 412	Advanced Taxation **OR**	3
ACT 431	Advanced Managerial Accounting	
Accounting Elective		**3**
All Accounting electives must be 400-level courses. All accounting electives must be taken at the 400 level. Students who plan careers in public accounting should seek the advice of accounting faculty concerning their choice of accounting electives.		
Business Elective		**3**
Any 300- or 400- level course in College of Business except BIS 315		
Non-Business Electives		**12**
Courses outside the College of Business		
Total credits:		**120**

ACT 211 three credits
Principles of Accounting I
Prerequisite: Sophomore standing

Accounting concepts and procedures are studied through the analysis, classification, recording, and summarizing of business transactions. Financial statements are introduced and shown to be a source of essential information for management and others outside of the business.

ACT 212 three credits
Principles of Accounting II
Prerequisites: ACT 211, sophomore standing

An introduction to Managerial Accounting that places an emphasis on the way managers use accounting data within their own organizations for planning, control, and making decisions. The course is structured to provide a foundation of cost terms, systems design, cost behavior, procedural techniques for planning and control, performance measurements and the use of data for making operational decisions.

ACT 311 three credits
Intermediate Accounting I
Prerequisites: A grade of C or better in both ACT 211 and 212 and at least junior standing

The first of two courses that provide a comprehensive treatment of financial reporting topics. The course focuses on the conceptual, procedural, and regulatory issues involved in preparing and understanding corporate financial statements.

ACT 312 three credits
Intermediate Accounting II
Prerequisites: A grade of C or better in ACT 311 and at least junior standing

A continuation of the study of financial reporting and financial statement analysis that begins in ACT 311.

ACT 351 three credits
Cost Accounting
Prerequisites: ACT 212 and at least junior standing

A study of procedures used to measure costs under the job order cost and process cost systems; standard costs and budgeting also covered.

ACT 355 three credits
Accounting Information Systems
Prerequisites: BIS 101 or ENL 102, or permission of Assistant Dean for Undergraduate Programs.

A study of the design and implementation of successful accounting systems. Significant attention is devoted to the relationship among components of an accounting system, the use of information for decision-making, and internal control. Ethical issues in providing and using information are considered. For accounting majors and non-business students only. Cannot be used as a business elective by non-accounting majors.

ACT 399 three credits
Internship in Accounting
Prerequisites: At least junior standing; permission of the instructor, department chairperson, and college dean; approved contract filed by end of the add/drop period of the semester

Work experience at a specialized level supervised for graded academic credit by a faculty member in the student's major field. Terms and hours to be arranged. Students must register in advance to receive credit for an internship in the Business College. Deadline for registration and approval for internship contracts is the end of the add/drop period; no late contracts or registrations will be accepted. For specific procedures and regulations, see section of catalogue on Other Learning Experiences.

ACT 401 three credits
Auditing
Prerequisites: A grade of C or better in ACT 311; at least junior standing

A study of the audit function as performed by the outside public accounting firm. All stages are covered: planning the audit, gathering evidence, review of internal control provisions, development of working papers, analysis of accounts, preparation of statements, and final audit report. The ethics of the accounting profession are stressed throughout the course.

ACT 402 three credits
Advanced Auditing
Prerequisites: ACT 401 and senior standing

Contemporary issues and problems in auditing and assurance services. Topics may include application of auditing concepts and theory, auditing in a computerized environment, application of judgment relative to assurance services, and management of risk in the contemporary environment.

ACT 410 three credits
Federal Tax Accounting
Prerequisites: ACT 212 and at least junior standing; not for accounting majors

Overview of the federal, state and local tax laws as they apply to individuals and businesses. This course focuses on specific tax laws which apply to individuals, partnerships and corporations, with emphasis on tax planning rather than preparation of the specific tax forms.

ACT 411 three credits
Taxation
Prerequisites: ACT 212 and at least junior standing

A study of federal income taxes. Topics will include history and background of the federal income tax system, taxable items, and methods of computation. Research skills will be taught and competency will be developed using both paper and electronic sources.

ACT 412 three credits
Advanced Taxation
Prerequisites: ACT 411 and at least junior standing

Comprehensive tax research techniques applied to different business entities. The course will enhance both research and communication skill in taxation.

ACT 421 three credits
Advanced Financial Accounting
Prerequisites: A grade of C or better in ACT 311 and ACT 312; senior standing

Advanced topics in financial accounting. Students will become familiar with accounting for investments, business combinations, and foreign currency translations.

ACT 431 three credits
Advanced Managerial Accounting
Prerequisites: ACT 351 and senior standing

Advanced concepts and methods of the flow of accounting information through the organization. The course emphasizes uses of accounting so that managers can effectively make plans to control resources, including planning and controlling of business activities and managerial decision making.

ACT 441 three credits
Government and Non-Profit Accounting
Prerequisites: ACT 312 and senior standing

A study of non-corporate organizations with primary focus on governments, hospitals, colleges and universities, and voluntary health and welfare organizations. Coverage will include principles of fund accounting, financial reporting, budgeting, and auditing governmental and not-for-profit organizations. In addition, topics related to operating a business as a partnership will be included.

ACT 452 three credits
Special Topics in Accounting
Prerequisites: A grade of C or better in ACT 311 and 312; senior standing

Current topics of interest to the accounting profession

ACT 493 (FIN 493) three credits
Financial Management of Corporations
Prerequisites: FIN 312, at least junior standing

Advanced work in the management of corporate funds. Selected topics from the various fields of financial activity with emphasis on trends, current problems and research are studied. The topics emphasized include: capital expenditure policies, long-term and short-term financing problems, dividend policies, mergers and consolidating, and trends in financial markets.

ACT 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

ACT 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Finance Major
BS degree

The curriculum in finance seeks to develop an understanding of the role played by finance in various organizations. Finance deals with the acquisition and management of resources to accomplish organizational objectives within an acceptable risk/return profile. The financial manager decides how to raise funds in the capital markets and how best to invest these funds in order to accomplish organizational objectives. To accomplish these tasks the discipline of finance has developed a sophisticated set of analytical tools that bring together concepts from a variety of sources such as economics, accounting and mathematics. The concepts and techniques developed in finance are equally applicable to not-for-profit organizations that must also raise and invest funds in an efficient manner. Those skilled in financial analysis play a central role in deciding such current issues as mergers, buyouts and international investments.

Requirements

		Credits
General Requirements — Years One and Two		**57**
ENL 101, 102	Critical Writing and Reading I, II	6
MTH 107	Elements of College Math Enhanced	3
MGT 210, 211	Business Statistics I, II	6
BIS 101	The Business Organization	3
ENL 265	Business Communications	3
ECO 231, 232	Principles of Micro/Macroeconomics	6
ACT 211, 212	Principles of Accounting I, II	6
ACT 211, 212	Principles of Accounting I, II	6
	Cult./artistic literacy	9
	Non-business global awareness	3
	Non-business diversity	3
	Natural science/technology	6
	Social science elective	3
Core Business Requirements		**24**
MKT 211	Principles of Marketing	3
MGT 311	Organizational Behavior	3
BIS 315	Business Information Systems	3
MGT 333	Quantitative Business Analysis	3
FIN 312	Financial Management	3
MGT 312	Legal Framework of Business	3
MGT 345	Operations Management	3
MGT 490	Strategic Management and Policy Formulation	3
Finance Core Courses		**24**
FIN 383	Investment Analysis	3
FIN 385	Applied Capital Budgeting	3
FIN 398	Financial Institutions	3
FIN 484	Advanced Investment Analysis	3
FIN 485	Seminar	3
FIN 493	Financial Management of Corporations	3
FIN 494	International Financial Management	3
ACT 410	Federal Tax Accounting	3
Business Elective		**3**
Any 300- or 400- level course in College of Business except ACT 355		
Non-Business Electives		**12**
Courses outside the College of Business		
Total credits:		**120**

FIN 312 three credits
Business Finance
Prerequisites: ACT 212, ECO 231 and at least junior standing

An introduction to the nature of financial management. The course presents the basic tools used in the decision-making process as they pertain to the acquisition, management, and financing current and long-term assets. Working capital policies, the time value of money, capital budgeting, and debt and equity financing are discussed.

FIN 320 three credits
Personal Finance
Prerequisite: at least junior standing

An introduction to the financial planning process of setting goals, developing action plans, creating budgets and measuring results. The student will become familiar with the techniques of financial analyses necessary to make choices when considering housing, insurance, retirement plans, borrowing and other personal finance issues.

FIN 383 three credits
Investment Analysis
Prerequisites: FIN 312; at least junior standing

Method and techniques of determining investment merit of various types of securities. Bonds, preferred stocks and common stocks in various types of investment portfolios are studied. The effect of the business cycle on investment policy will be examined and the importance of timing investment commitments will be stressed. The investment techniques of fundamental analysis, technical analysis and efficient market theory are carefully implored. (Formerly FIN 483.)

FIN 385 three credits
Applied Capital Budgeting
Prerequisites: FIN 312; and at least junior standing

A study of theoretically valid and readily-applied methods of capital budgeting for business and government organizations. Complexities such as risk, timing and measurement problems dealt with only briefly in introductory courses are examined more fully. Capital budgeting considerations in government organizations not presented in the current finance curriculum will be discussed thoroughly.

FIN 397 three credits
Financing Forecasting Methods
Prerequisites: FIN 312 and at least junior standing

A study is made of the dynamic forces on economic activity. National income accounting and analysis, economic indicators and measures, forecasting for the economy of the firm, and problems of stability and growth are considered.

FIN 398 three credits
Financial Institutions
Prerequisites: FIN 312 and at least junior standing

A detailed study of the operations of financial institutions and the interrelationships between their operations and economic activity. Emphasis is placed on the effect of economic forces, regulation and technological change on the operations of these institutions.

FIN 399 three credits
Internship in Finance
Prerequisites: At least junior standing; permission of the instructor, department chairperson, and college dean; approved contract filed by end of the add/drop period of the semester

Work experience at a specialized level supervised for graded academic credit by a faculty member in the student's major field. Terms and hours to be arranged. Students must register in advance to receive credit for an internship in the Business College. Deadline for registration and approval for internship contracts is the end of the add/drop period; no late contracts or registrations will be accepted. For specific procedures and regulations, see section of catalogue on Other Learning Experiences.

FIN 484 three credits
Advanced Investment Analysis
Prerequisites: FIN 383; at least junior standing

An examination in greater depth of subjects covered in the foundation investment analysis course and an introduction to recent innovations in the field. Emphasis is give to the place of derivatives in the portfolio, the active management of risk, and the management of retirement assets and pension funds. Assignments include case studies involving the use of computer software and reports requiring an analysis of current research literature.

FIN 485 three credits
Seminar
Prerequisites: FIN 385, 398; senior standing

Emphasis on the analysis of case studies. Based on assigned readings in the finance literature, students select a topic for independent research. Progress on the research paper is closely monitored by conferences and class presentations.

FIN 493 (ACT 493) three credits
Financial Management of Corporations
Prerequisites: FIN 312 and at least junior standing

Advanced work in the management of corporate funds. Selected topics from the various fields of financial activity with emphasis on trends, current problems and research are studied. The topics emphasized include: capital expenditure policies, long-term and short-term financing problems, dividend policies, mergers and consolidations, and trends in financial markets.

FIN 494 three credits
International Financial Management
Prerequisites: FIN 312 and at least junior standing

Understanding the forces that affect the relative value of currencies in international markets, covering the major problems encountered by the firm in financing international operations.

FIN 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

FIN 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Management

The Department of Management offers a major program leading to a bachelor of science degree in Management. The purpose of the Management program is to enable undergraduate management students to gain the requisite understanding of management concepts and to acquire the appropriate application skills which will allow them to function creatively, flexibly, and successfully in private or public, domestic, and global organizations of any size.

Faculty and Fields of Interest

William R. Allen strategic management, organizational behavior, human resources development

Paul Bacdayan organizational behavior, total quality management, management communications

Aleta Best strategic management, international business, diversification, corporate governance, business and government

Peter H. Cressy (chancellor of the university) organizational behavior, human resources development, leadership

Walter O. Einstein strategic management, organizational behavior/development, leadership, motivation

Laura Forker operations management

Audrey Glassman statistics

Richard F. Golen (assistant dean for undergraduate programs) business law, computer law, human resources law

A. Gunasekaran materials management, total quality management, process management

Bulent Kobu operations management, quantitative analysis, quality and productivity management

Kellyann Kowalski human resources development, organizational behavior, managing diversity, labor relations

Richard D. Legault operations management, quantitative analysis, quality and productivity management

Ronald D. McNeil (dean of the college) strategic planning, organizational development and change, entrepreneurship

Susanne Scott organizational behavior, team development, leadership and innovation

Dennis Shaul legal framework of business, industrial relations, regulatory law

Kathleen Suchon (chairperson) strategic management, human resources development

Diana Stork statistics, organizational behavior

Ercan Tirtiroglu quantitative analysis, statistics, information, theory, quality and marketing science

Management Major

BS degree

The Management major seeks to enable undergraduate management students to gain the requisite understanding of management concepts and to acquire the appropriate application skills to function creatively, flexibly and successfully in private or public, domestic, and global organizations of any size.

Requirements

		Credits
General Requirements — Years One and Two		**57**
ENL 101, 102	Critical Writing and Reading I, II	6
MTH 107	Elements of College Math Enhanced	3
MGT 210, 211	Business Statistics I, II	6
BIS 101	The Business Organization	3
ENL 265	Business Communications	3
ECO 231, 232	Principles of Micro/Macroeconomics	6
*ACT 211, 212	Principles of Accounting I, II	6
ACT 211, 212	Principles of Accounting I, II	6
	Cult./artistic literacy	9
	Non-business global awareness	3
	Non-business diversity	3
	Natural science/technology	6
	Social science elective	3
Core Business Requirements		**24**
MKT 211	Principles of Marketing	3
MGT 311	Organizational Behavior	3
BIS 315	Business Information Systems	3
MGT 333	Quantitative Business Analysis	3
FIN 312	Financial Management	3
MGT 312	Legal Framework of Business	3
MGT 345	Operations Management	3
MGT 490	Strategic Management and Policy Formulation	3
Management Core Courses		**12**
MGT 336	Management History and Theory	3
MGT 365	Managing People: Theory and Practice	3
MGT 431	Developing and Managing Work Teams	3
MGT 445	Total Quality Improvement	3
Management Career Direction		**12**
Students must work with their advisor to decide on a particular career direction before undertaking these courses; requires departmental chairperson approval.		
Human Resource Development		
MGT 443	Human Resources Development	3
MGT 461	Organizational Development	3
MGT 452	Human Resources Law	3
MGT 462	Managing Diversity	3
Operations		
MGT 334 or 335	Applied Decision Models	3
MGT 446	Process Design and Management	3
MGT 425	Materials Management	3
MGT 465	Logistics and Supply Management	3
Business Elective		**3**
Any 300- or 400- level course in College of Business except ACT 355		
Non-Business electives		**12**
Courses outside the College of Business		
Total credits:		**120**

Management Courses

MGT 210 three credits
Business Statistics I
Prerequisites: MTH 107; sophomore standing

Examines descriptive and inferential statistics as applied to business and industry. (Formerly MMT 210)

MGT 211 three credits
Business Statistics II
Prerequisites: MGT 210; sophomore standing

Examines inferential statistics focusing on regression and correlation analysis, time series forecasting, design of experiments, enumerative studies and the analysis of differences. Emphasis is on applications of statistical concepts as practiced in business & industry. (Formerly MMT 211)

MGT 311 three credits
Organizational Behavior
Prerequisites: ENL 265; junior standing

An interactive skills-building course to improve managerial and team performance. Students will develop an understanding of themselves in relation to others in an organizational context. The class will be conducted as a networked learning organization and will foster a spirit of inquiry and team learning. Class time will be allocated among short lectures, exercises, discussion, process observation, role playing, and team work research.

MGT 312 three credits
Legal Framework of Business
Prerequisite: At least sophomore standing.

Provides students with an overview of the legal environment of business. Topics covered include contracts, agency and tort law; labor law; securities law. Students will develop a general background in the major aspects of the law as it affects the daily business environment.

MGT 331 three credits
Industrial Relations and Labor Management
Prerequisites: MGT 311, 336
Serves as an elective in the College of Business

Background and present status of labor organizations. Emphasis is on current labor-management issues and aims to help students understand specific practices, such as collective bargaining. Formerly HRM 331.

MGT 333 three credits
Quantitative Business Analysis
Prerequisites: MTH 107; MGT 210, 211; junior standing

Provides the student with an appreciation of the power and limitations of common managerial techniques used in the analysis of business problems requiring a quantitative decision-making approach. The emphasis is on a careful presentation of problem formulation, mathematical analysis, and solution procedures using examples involving business situations. Computer use is emphasized.

MGT 334 three credits
Applied Decision Models for Services
Prerequisite: MGT 333

Service applications of selected analytical decision making tools and techniques. The course illustrates, by example, how service operations can apply quantitative tools to decisions such as crew size determination using queuing theory; staffing/scheduling problems using linear programming; service level planning using inventory analysis.

MGT 335 three credits
Applied Decision Models for Manufacturing
Prerequisite: MGT 333

Manufacturing applications of selected analytical decision making tools and techniques. The course illustrates, by example, how manufacturing activities apply quantitative approaches to decision making, such as in product mix planning using linear programming; capacity planning and bottleneck elimination using waiting line analysis, simulation in inventory control, etc.

MGT 336 three credits
Management History and Theory
Prerequisites: MGT 311 and at least junior standing

A critical review of organizational theory and practice, from the "Classical Schools" to contemporary notions. Students will learn the historical roots of current managerial practices; primary focus will be put upon students being able to examine critically and apply such theories to current business organizations.

MGT 345 three credits
Operations Management for Manufacturing
Prerequisites: MGT 333 and at least junior standing

The planning, coordination, and execution of activities in transformation processes in manufacturing and service organizations, where the inputs to the process may be the customers themselves. The role of the operations manager is explored, and attention is given to analytical methods that improve production processes and enhance competitive strategies. (Combines former courses MGT 346 and 347)

MGT 365 three credits
Managing People: Theory and Practice
Prerequisites: MGT 311 and at least junior standing

An examination of the interrelated concepts of motivation and leadership. Students will explore, experientially and theoretically, historical and contemporary theories of supervising, managing, leading, and motivating people in organizational contexts. Specific "real world" tools will be examined for their efficacy in supervising and managing people.

MGT 399 three credits
Internship in Management
Prerequisites: At least junior standing; permission of the instructor, department chairperson, and college dean; approved contract filed by end of the add/drop period of the semester

Work experience at a specialized level supervised for graded academic credit by a faculty member in the student's major field. Terms and hours to be arranged. Students must register in advance to receive credit for an internship in the Business College. Deadline for registration and approval for internship contracts is the end of the add/drop period; no late contracts or registrations will be accepted. For specific procedures and regulations, see section of catalogue on Other Learning Experiences.

MGT 420 (MKT 420) three credits
International Management and Marketing
Prerequisites: MKT 311 and senior standing

A systematic treatment of management and marketing on a global scale. Emphasis is placed on the study of the dimensions of foreign market environments, marketing across national boundaries and management and marketing simultaneously in two or more national environments.

MGT 425 three credits
Materials Management
Prerequisite: MGT 345

Emphasizes the control of materials within an organization. The course describes the operations planning function for materials through the mechanisms of textbook presentation and a computerized Material Requirements Planning software package, and is supplemented by certification materials and activities supplied by the American Production and Inventory Control Society.

MGT 431 three credits
Developing and Managing Work Teams
Prerequisites: MGT 311, 336, 365

An exploration of the concept of team development in U.S. organizations today. Students will examine the approaches, successes, and failures of team development, and will be required to engage in team management and development efforts as a significant part of the course.

MGT 435 three credits
Conflict Management
Prerequisites: MGT 311 and at least junior standing

Formal and informal methods of conflict resolution among people in organizations. Theories and methods of conflict resolution will be studied and practiced for their efficacy. This course provides students with the opportunity to develop the skills required to become effective conflict managers in organizational contexts. This course serves as an elective in the College of Business.

MGT 443 three credits
Human Resources Development
Prerequisites: MGT 311, 336, 365

The study of sets of systematic, planned activities which organizations develop for the purpose of providing people with skills/knowledge appropriate for the current health and future positive growth of the people and organization. Students will learn basic Human Resources Management skills, the roles of HRD professionals, organizational and individual needs assessment tools/skills; training and development program development tools; and HRD program evaluation skills/techniques.

Gen Ed Key

D Diversity

MGT 445 three credits
Total Quality Improvement
Prerequisite: MGT 345; and at least junior standing

Principles and practices underlying the continuous improvement of quality in the business and non-business enterprise. Particular attention is given to philosophies and methods of organizing for quality, and to tools for quality improvement, including statistical quality control. The instructional approach is highly experiential and interactive, and features contact with quality systems professionals.

MGT 446 three credits
Process Design and Management
Prerequisites: MGT 345; and at least junior standing

Methodologies for the design and management of processes used for delivering and maintaining products and services to customers. This course examines customer requirements for products and services and the contexts in which this information will be used by looking at a total design methodology that integrates customer-focused, technology-independent methods with traditional engineering design processes. A systems approach is employed that recognizes the impact on the design process of technology, the competitor, the customer, costs of production, and quality, innovation, and delivery.

MGT 452 three credits **D**
Human Resources Law
Prerequisites: MGT 312, 365, and at least junior standing

The laws, executive orders, and political and social factors external to firms with affect their human resources management practices. Topics include ethics and social responsibility, regulatory issues, EEOC, affirmative action, performance appraisal, and discrimination in the workplace. (Formerly HRM 452)

MGT 461 three credits
Organizational Development
Prerequisites: MGT 311, 336; and at least junior standing

An exploration of contemporary theories for effectively structuring and maintaining organizations. Students will examine the theories and assumptions which underlie the decisions to configure business organizations. Topics include: OD and systems theory, bureaucratic structures, organic structures, virtual corporations, team structures, the relationship of structure to people, managing change.

MGT 462 three credits **D**
Managing Diversity
Prerequisites: MGT 311, 336, 365; and at least junior standing

A skills-building course aimed at increasing awareness of the issues related to managing multicultural workplaces. Focus will be placed on the challenges and opportunities afforded leaders/managers in dynamic U.S.-based workplaces. Personal exploration of prejudices, myths/facts, and perceptions which shape effective leadership will be central to this course.

MGT 463 three credits
Management of Technology
Prerequisite: MGT 461; and at least junior standing

Issues and concerns in technology adoption and implementation. Particular attention is given to the implication of new technology for business strategies regarding work force, employment, processes, investment, and marketing. The course emphasizes the immense potential of advancing technology and channeling it for higher productivity and better quality. This course serves as an elective in the College of Business.

MGT 470 three credits
Management Seminar
Prerequisite: Senior standing

Reading and discussion of important research and literature in student's particular field of interest, culminating in a major written paper.

MGT 490 three credits
Strategic Management and Policy Formulation
Prerequisites: MGT 311, 333, 345, FIN 312, BIS 315 or ACT 355, MKT211; senior standing in major in college

The capstone course for majors in business administration. Students bring to bear all their functional expertise, communication skills, and problem-solving abilities onto issues faced by senior management in business organizations in the world today. This course is to be taken during the last semester of the student's program. (Formerly MGT 411)

MGT 495 variable credit
Independent Study
Prerequisites: Upper-division standing, permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

MGT 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Marketing and Business Information Systems

The Department of Marketing and Business Information Systems offers major programs leading to Bachelor of Science Degree.

The purpose of the Marketing Program is to prepare students for careers in domestic and international marketing with a focus on consumers and acquiring information for decision making.

The purpose of the Business Information Systems program is to prepare students for careers in the application of information technology that solve business problems and explore new business opportunities.

Faculty and Fields of Interest

Thomas L. Ainscough principles of marketing and information technology

Nora Ganim Barnes marketing research, consumer behavior

John Baron electronic commerce, information systems, software engineering

John A. Chopoorian (chairperson) international marketing, marketing management

Roger J. Deveau systems analysis and design, business information systems, end user computing

Michael Griffin information systems, introduction to business and systems

Fahri Karakaya consumer behavior, marketing research, marketing management

Omar E. M. Khalil (assistant dean for graduate programs and AACSB activities, coordinator for BIS) management information systems, database systems, information management

Renato G. Miele data communication and networking, information systems

D. V. Rama information systems, end-user computing

Shouhong Wang systems analysis, programming, electronic commerce

D. Steven White services marketing, promotion and advertising, selling and sales management, international marketing

Robert Witherell management systems, computer technology

Business Information Systems Major

BS degree

The Business Information Systems program of study is designed to prepare students for one of the most rapidly expanding professions in the business world.

BIS prepares the student both to analyze an organization's information systems structure and to design and implement that system. This major offers a broad educational experience in business, computer applications, the humanities, and social sciences.

The primary emphasis of the UMass Dartmouth program is the application of the "systems approach" to business problem-solving and decision-making. Analysis of both on-campus and off-campus "real-life" business systems provides students with practical experience and increases their value in the professional career market.

Business Information Systems majors differ from computer science majors in emphasizing applications of computer systems over their development and analysis. The applications are focused on complex business needs in organizations. BIS majors conceptualize, design, and implement high quality business systems and build bridges between technical realities, organizational functions, and decision-making by managers.

Requirements

		Credits
General Requirements — Years One and Two		**57**
ENL 101, 102	Critical Writing and Reading I, II	6
MTH 107	Elements of College Math Enhanced	3
MGT 210, 211	Business Statistics I, II	6
BIS 101	The Business Organization	3
ENL 265	Business Communications	3
ECO 231, 232	Principles of Micro/Macroeconomics	6
ACT 211, 212	Principles of Accounting I, II	6
	Cult./artistic literacy	9
	Non-business global awareness	3
	Non-business diversity	3
	Natural science/technology	6
	Social science elective	3
Core Business Requirements		**24**
MKT 211	Principles of Marketing	3
MGT 311	Organizational Behavior	3
BIS 315	Business Information Systems	3
MGT 333	Quantitative Business Analysis	3
FIN 312	Financial Management	3
MGT 312	Legal Framework of Business	3
MGT 345	Operations Management	3
MGT 490	Strategic Management and Policy Formulation	3
Business Information Systems Core Courses		**21**
BIS 211	Information Technology Hardware and Software	3
BIS 212	Programming and Problem Solving	3
BIS 322	Systems Analysis and Design	3
BIS 341	Data Communication and Networks	3
BIS 432	Database Design and Implementation	3
BIS 461	Management of Information Systems	3
BIS 462	Advanced Information Systems Project	3
Business Information Systems Elective		**3**
Business Elective Any 300- or 400- level course in College of Business except ACT 355		**3**
Non-Business Electives Courses outside the College of Business		**12**
Total credits:		**120**

BIS 101 three credits
The Business Organization
2 hours lecture, 1 hour laboratory

The first business core course, introduces business majors to the world of business and enriches their freshman year experience. It provides students with an overview of business, its environment, and its subsystems (e.g., operations, marketing, accounting, finance, and information systems); enhances their information and computer skills; and develops their team working skills and attitude. Informational and advising sessions help students make decisions in areas such as the selection of courses, a major, a career, and the utilization of on campus student resources. This course may be replaced by a business elective by transfer students demonstrating master of Tier I general education computing skills.

BIS 211 three credits
Information Technology Hardware and Software
Prerequisite: Sophomore standing

Provides the hardware-software technological background to enable students to understand the tradeoffs in computer systems architecture for effective use in the business environment. Topics include hardware components (e.g., CPU architecture, memory, registers, addressing modes, busses, instruction sets, peripheral devices) and software components (e.g., software environment, system software evolution, and the types and functionalities of operating systems and system-user interfaces. BIS majors only, cannot be used to fulfill a Business Elective for non-BIS majors.

BIS 212 three credits
Programming and Problem Solving
Prerequisite: Sophomore standing

Develops skills in problem solving of business related issues using the techniques of structured program design and in the use of one or more programming languages. Students begin with simple problems and input/output programs, and progress to more difficult problems and programs as they become accustomed to using structured programming. BIS majors only, cannot be used to fulfill a Business Elective for non-BIS majors. (Formerly BIS 202.)

BIS 315 three credits
Information Systems
Prerequisite: At least junior standing; BIS 101, or ENL 102, or permission of Assistant Dean for Undergraduate Programs.

Provides an understanding of information technology and systems and how information is used in support of decisions and organizational processes. Emphasis is on how information systems relate to organizational systems and decision making, information systems components, implementation and evaluation of systems performance, and ethical issues related to information systems design and use. Cannot be used as a Business Elective by Accounting Majors.

BIS 322 three credits
Business Systems Analysis and Design
Prerequisites: BIS 315 and at least junior standing

Provides students with a basic understanding of the process and the techniques of analyzing and designing computer-based information systems. The entire spectrum of system analysis and design will be covered, beginning with the first request for a system study and continuing through with the feasibility, analysis, design, implementation, and maintenance phases of the system development life cycle.

BIS 341 three credits
Data Communication and Networks
Prerequisites: BIS 315 and at least junior standing

How individual computers and groups of computers can be linked together via telecommunication networks to form optimally performing, integrated computer networks. Emphasis is placed on how such networks make the best use of available computer resources while also providing computer system users with information of the highest value at the lowest cost. The course also examines the communications environment, regulatory issues, and network pricing and management. (Formerly BIS 441)

BIS 371 three credits
End-User Software Applications
Prerequisite: At least junior standing; BIS 101

Emphasizes computer competency in the use of personal computers in the modern business environment. Personal productivity applications involving spreadsheet analysis, database construction, and advanced word-processing applications are studied. (Formerly BIS 201)

BIS 375 three credits
Information Systems Applications for Manufacturing
Prerequisite: BIS 315 or permission of instructor

Provides a basic understanding of the potential benefits, dangers, and limitations of using information technology (IT) and systems in support of manufacturing. Topics covered include contemporary manufacturing systems, IT-enabled manufacturing, IS applications in manufacturing (e.g., computer integrated manufacturing, CAD/CAM, artificial intelligence, EDI).

BIS 381 three credits
Legal and Ethical Issues in Information Systems
Prerequisite: BIS 315

Legal and ethical issues relating to the use of information technology and systems in modern society. Topics to be covered include contracts for computer services such as sales and leasing; intellectual property areas such as software protection, licensing, copyrighting, etc.; tort and constitutional areas dealing with rights of privacy; criminal areas dealing with computer crime, and tax law issues of computer hardware/software. (Formerly BIS 453)

BIS 399 three credits
Internship in Business Information Systems
Prerequisites: At least junior standing; permission of the instructor, department chairperson, and college dean; approved contract filed by end of the add/drop period of the semester

Work experience at a specialized level supervised for graded academic credit by a faculty member in the student's major field. Terms and hours to be arranged. Students must register in advance to receive credit for an internship in the Business College. Deadline for registration and approval for internship contracts is the end of the add/drop period; no late contracts or registrations will be accepted. For specific procedures and regulations, see section of catalogue on Other Learning Experiences.

BIS 432 three credits
Business Data Systems
Prerequisites: At least junior standing; BIS 322

Students demonstrate their mastery of the analysis and design processes acquired in earlier courses by designing and constructing databases to meet the information needs of users. Topics covered include data models and modeling techniques, information engineering, database design and implementation, data quality and security, and the client/server environment. (Formerly BIS 332)

BIS 451 three credits
Management of End-User Computing
Prerequisites: BIS 315 and senior-standing

Theoretical and conceptual framework of end-user computing. The course emphasizes the development of management information systems skills to guide end users in applications, analysis, hardware configuration selection, software package selection, training, and applications development.

BIS 461 three credits
Management of Information Systems
Prerequisites: BIS 315 and senior standing

Technical tools and managerial approaches required in the administration of information systems functions and projects. Topics include budgeting and planning, the structure and management of computer operations, measurement of operating performance, project management techniques for systems development and implementation, human resource management, and the role of the information systems manager. (Formerly BIS 316)

BIS 462 three credits
Advanced Business Information Systems Projects
Prerequisites: BIS 432 and senior standing

Capstone course in the Business Information Systems program. Students are divided into task groups, each taking on a specific business-related information system-based problem. Business, interpersonal, and technical skills are enhanced as students design and implement computer-based solutions to real business problems.

BIS 475 three credits
Information Systems and Business Process Design
Prerequisites: BIS 315 and senior standing

Introduction to the role if information technology (IT) and systems in support of an organization seeking to improve the efficiency and effectiveness of its business processes. Topics covered include total quality management (TQM) and business process reengineering (BPR). BPR methodologies, enterprise modeling and modeling techniques, IT-enabled change, change management, IS role in BPR projects, and IS role in process management.

BIS 490 three credits
Special Topics in Information Systems
Prerequisite: Senior standing

Reserved for special topics in business information systems. May be repeated with change of content.

BIS 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged

BIS 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Marketing Major
BS degree

The marketing curriculum is designed to prepare students for successful careers in the many phases of marketing and distributing products and services throughout the economy.

Courses are oriented toward problem-solving and management decision-making. The total curriculum emphasizes knowledge and competence in marketing that will enable the program's graduates to progress well in the early stages of their careers; to develop the ability to analyze, plan, organize, coordinate, motivate and control; to think creatively; to communicate effectively, and to gain broad perspectives essential to the attainment of ownership or executive management responsibilities. Graduates are prepared for career opportunities such as research analysts, sales managers, directors of marketing programs, or professional sales personnel.

There are also opportunities for students to gain actual work experience through the International Business Association, which sponsors student-run trade missions to various overseas locations and a special market research program in which students conduct marketing research projects and surveys for area business and organizations. See Student Handbook for information about the International Business Association and a student chapter of the American Marketing Association (AMA). In some cases, upon consultation with the department chair or student's advisor, academic credit may be available for these study-travel or work experiences through an appropriate course registration.

Requirements

		Credits
General Requirements — Years One and Two		**57**
ENL 101, 102	Critical Writing and Reading I, II	6
MTH 107	Elements of College Math Enhanced	3
MGT 210, 211	Business Statistics I, II	6
BIS 101	The Business Organization	3
ENL 265	Business Communications	3
ECO 231, 232	Principles of Micro/Macroeconomics	6
ACT 211, 212	Principles of Accounting I, II	6
	Cult./artistic literacy	9
	Non-business global awareness	3
	Non-business diversity	3
	Natural science/technology	6
	Social science elective	3
Core Business Requirements		**24**
MKT 211	Principles of Marketing	3
MGT 311	Organizational Behavior	3
BIS 315	Business Information Systems	3
MGT 333	Quantitative Business Analysis	3
FIN 312	Financial Management	3
MGT 312	Legal Framework of Business	3
MGT 345	Operations Management	3
MGT 490	Strategic Management and Policy Formulation	3
Marketing Core Courses		**21**
MKT 331	Promotional Strategy	3
MKT 330	Marketing Intelligence and Information Technology	3
MKT 341	Consumer Behavior	3
MKT 420	International Marketing and Management	3
MKT 421	Advertising	3
MKT 441	Marketing Management	3
MKT 442	Marketing Research	3
Marketing Elective		**3**
Business Elective Any 300- or 400- level course in College of Business except ACT 355		**3**
Non-Business Electives Courses outside the College of Business		**12**
Total credits:		**120**

MKT 211 three credits
Principles of Marketing
Prerequisite: sophomore standing

A basic understanding of the role and scope of responsibilities facing contemporary marketing management. Emphasis is placed on the integration of marketing principles into an organized approach for decision making. (Formerly MKT 311)

MKT 330 three credits
Marketing Intelligence and Information Technology
Prerequisite: At least junior standing; MKT 211

Provides students a working knowledge of secondary data acquisition and analysis. This course places strong emphasis on written and oral communication skills.

MKT 331 three credits
Promotional Strategy
Prerequisites: MKT 211 and junior standing

Basic understanding of the factors affecting promotional decisions as well as the role of promotional effort in market strategy planning. The basic principles of advertising, sales promotion and personal selling are integrated.

MKT 341 three credits
Consumer Behavior
Prerequisites: MKT 211 and senior standing

A study of consumer decision processes as a series of activities related to the purchase and consumption of goods. Emphasis is given to contemporary thought on the consumer problem- solving process, namely problem recognition, search, evaluation, commitment and post-purchase behavior. (Formerly MKT 431)

MKT 370 three credits
Social and Ethical Issues in Marketing
Prerequisites: MKT 211 and senior standing

An examination and appraisal of contemporary thought on the extent to which marketing activities influence the ethical and social values of society. (Formerly MKT 446)

MKT 360 three credits
Business-to-Business Marketing
Prerequisites: MKT 211 and junior standing

A study of contemporary market strategy techniques in industrial companies. Emphasis is placed on the case approach where students are provided an opportunity to develop strategies in response to given market opportunities and competitive behavior.

MKT 372 three credits
Retail Management and Fashion Merchandising
Prerequisites: MKT 211 and junior standing

Presents a strategic marketing-oriented framework within which the student can appreciate the interrelationships of the industries and forces that make up the businesses bringing "fashion" fiber to market. The course examines the basic concepts fundamental to understanding the retail environment and the operation of retail firms. (Combines former courses MKT 354 and 358)

MKT 399 three credits
Internship in Marketing
Prerequisites: At least junior standing; permission of the instructor, department chairperson, and college dean; approved contract filed by end of the add/drop period of the semester

Work experience at a specialized level supervised for graded academic credit by a faculty member in the student's major field Terms and hours to be arranged. Students must register in advance to receive credit for an internship in the Business College. Deadline for registration and approval for internship contracts is the end of the add/drop period; no late contracts or registrations will be accepted. For specific procedures and regulations, see section of catalogue on Other Learning Experiences.

MKT 420 (MGT 420) three credits
International Marketing and Management
Prerequisites: MKT 211 and senior standing

A systematic treatment of marketing and management on a global scale. Emphasis is placed on the study of the dimensions of foreign market environments, marketing across national boundaries and management and marketing simultaneously in two or more national environments.

MKT 421 three credits
Advertising
Prerequisites: MKT 211, 331 and senior standing

Principal form and applications of advertising alternatives as a part of overall market strategy planning. Considerable emphasis is placed on applied problems which allow for student planning of advertising campaigns.

MKT 425 three credits
Product Strategy
Prerequisites: MKT 211 and senior standing

The decision steps of the product development process: innovation strategy, opportunity identification, designing new products, testing and improving products, product introduction and profit management, and implementing the new product development process.

MKT 432 three credits
Sales Management
Prerequisites: MKT 211 and senior standing

Sales programs are formulated and then implemented. This course deals with understanding the importance of these major responsibilities in an age of accelerating product complexity.

MKT 441 three credits
Marketing Management
Prerequisites: MKT 211 and senior standing

This course is based on the management point of view, being decision-oriented and analytical. It sets forth a definite way of surveying current developments in marketing practice, with the advantage of allowing the student freedom, via the case approach, in his or her choice of executive action.

MKT 442 three credits
Marketing Research
Prerequisites: MKT 211; MGT 210, 211; MKT 330; and senior standing

An examination of the market research process as used in approaching contemporary marketing problems. Emphasis is placed on the current status of research techniques and their application.

MKT 490 three credits
Special Topics in Marketing
Prerequisite: Senior standing

Reserved for special topics in Marketing. May be repeated with change of content.

MKT 495
Independent Study variable credit
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

MKT 196, 296, 396, 496
Directed Study three credits
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

MBA graduate courses are not open to undergraduates. See the Graduate Catalogue for general and program requirements.

Descriptions for these courses are shown in the UMass Dartmouth *Graduate Catalogue*.

GBA 600 three credits
Statistical Analysis

GBA 601 three credits
Management Information Systems

GBA 602 three credits
Quantitative Analysis

GBA 603 three credits
Financial Accounting

GBA 604 three credits
Economic Concepts for Managers

GBA 605 three credits
Organizational Behavior

GBA 607 three credits
Financial Concepts

GBA 608 three credits
Marketing Concepts

GBA 609 three credits
Operations Management

GBA 610 three credits
Managerial Accounting

GBA 651 three credits
Managing Information and Communication Literacy

GBA 652 three credits
Managing Information and Communication Resources

GBA 653 three credits
Accounting and Finance for Decision Making

GBA 654 three credits
Operations and Organizational Processes

GBA 655 three credits
Business and Its Environment

GBA 656 three credits
Marketing and New Product Development

GBA 657 three credits
Competition and Competitiveness

College of Engineering

The College of Engineering offers engineering programs leading to the B.S. degree in Electrical, Computer, Mechanical, and Civil Engineering and the B.S. degree in Physics, Computer Science, Textile Science, and Textile Chemistry.

Our engineering programs form a strong foundation in basic sciences, mathematics, and engineering sciences. Our applied science students similarly acquire a strong foundation in the basic sciences and mathematics along with the applied sciences associated with their major. A progression of innovative design experiences culminate in a senior design project. Students in the College of Engineering use high-tech laboratories and sophisticated computer systems, beginning in their freshman year. The many faculty who are involved with significant research projects bring excitement into the classroom and tie theory to practical applications.

Our students develop the knowledge, creativity, and expertise to succeed in today's rapidly changing technical world. Our graduates are actively recruited by industry and find rewarding careers, or have gone on for advanced degrees in competitive graduate programs around the country.

Through cooperation with industry and government agencies, the College of Engineering also offers students the opportunity to obtain valuable work experience before graduation. Qualified students can participate in internships or cooperative education so that they gain practical engineering experience, a taste of the "real world," and significant income to help offset college expenses.

All undergraduate engineering programs in the college are nationally accredited by the Accreditation Board for Engineering and Technology (ABET); and the undergraduate program in Computer Science is accredited by the Computer Science Accreditation Board (CSAB).

Mission, Goals, and Objectives of the College of Engineering

The mission and goals of the College of Engineering are molded by the history of the region and the institution, by the existing needs of the region and its people, and by the emerging opportunities for regional economic growth. Building upon its quality undergraduate and expanding graduate programs, its facilities, and its faculty, the ***mission*** of the University of Massachusetts Dartmouth College of Engineering is *to provide educational opportunities for the region that emphasize teaching and learning, and to provide increased access to the College that will support economic growth in the region, the Commonwealth, and beyond.*

Given the above mission the educational ***goals*** of the University of Massachusetts Dartmouth College of Engineering are *to provide its graduates with a solid foundation of knowledge, and a level of skill that will allow them to function successfully in their professions upon graduation, and to have a breadth of education that will allow them to meet the needs of the contemporary workplace and to be life-long learners.* In particular, it is our intention to demonstrate that a graduate of the UMass Dartmouth College of Engineering will have met the following outcome ***objectives***:

- the ability to apply knowledge of mathematics, science, and engineering;
- the ability to design and conduct experiments, as well as to analyze and interpret data;
- the ability to design a system, component, or process to meet desired needs;
- the ability to function on multidisciplinary teams;
- the ability to identify, formulate, and solve engineering and science problems;
- the understanding of professional and ethical responsibility;
- the ability to communicate effectively;
- the broad education necessary to understand the impact of engineering and scientific solutions in a global/societal context;
- a recognition of the need for and an ability to engage in life-long learning;
- a knowledge of contemporary issues; and,
- the ability to use techniques, skills, and modern engineering and science tools necessary for professional practice.

The knowledge and skills represented by the above list, which are consonant with those of the Accreditation Board for Engineering and Technology (ABET), are essential in contemporary engineering and science endeavors, and contribute significantly to the graduate's ability to function successfully in the ever-challenging and exciting engineering and science professions.

Transfer Agreements

The College of Engineering seeks to facilitate the transfer of students from community colleges, and from four-year institutions that lack the engineering baccalaureate, by means of a variety of transfer and matriculation agreements.

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Course and program articulation matrices are maintained to facilitate planning and transfer between UMass Dartmouth engineering curricula and the courses and programs at Bristol, Massasoit, and Cape Cod Community Colleges. Transfer applicants from other institutions are assessed individually.

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Students at the University of Massachusetts Boston, Framingham State College, and Worcester State College who complete an identified 2-year curriculum and meet conditions for a standard of performance receive guaranteed admission to identified engineering programs at UMass Dartmouth.

Distribution Requirements / General Education Requirements for Civil, Computer, Electrical, and Mechanical Engineering

Degree candidates in the College of Engineering who will graduate *as the Class of 2002 or beyond* must satisfy the university's General Education requirements, as described in the Academic Policies section of this Catalogue.

- General Education requirements in Areas M and S and the Tier 1 Writing/Information requirement are automatically satisfied by the courses shown as required for these majors.
- The General Education requirements in Areas C, G, and D may be fulfilled by selecting courses from the approved lists in each area, using the General Education electives shown in the course requirement tables for each major.
- The requirements for General Education areas E, I, W, and O will be specified within courses that are included in each major. The departments are in the process of defining these requirements.

Engineering students graduating with classes *earlier than 2002* (for example, some transfer students) will meet the set of requirements called the "Humanities/Social Science Requirements," which were in effect for previous engineering classes. These are displayed in previous catalogues.

Distribution requirements for Computer Science, Physics, and Textile Science are shown separately below in the sections that describe those programs.

Special Admission Programs

Engineering Path Admission

The engineering programs are rigorous, requiring strong high school preparation and high motivation. Students who have demonstrated an aptitude for engineering based upon SATs, or have demonstrated the ability and motivation for engineering studies as evidenced by their high school record but have some deficiencies in their high school program of study, may still be offered admission to the college of engineering.

If the deficiencies identified are corrected during the summer preceding the start of the fall semester, these students may enroll in the engineering major of their choice in the fall semester. Otherwise, these students will be admitted into the Engineering Path program.

The Engineering Path program is intended for those students who have more deficiencies than can be made up during the summer, but are otherwise qualified for the rigors of an engineering program. For these students, a year-long program at UMass Dartmouth as an undeclared engineering major is required during which deficiencies are made up and progress on other required courses is obtained. The second year of this program is essentially the freshman year of the specific engineering program of interest, less any required courses completed during the year as an undeclared engineering major. The student can choose this lighter load to further enhance his/her academic standing, or can select other required courses in the curriculum to help shorten the time to graduation. Students who enter the College of Engineering via the Engineering Path will be able to proceed at their own pace after their first year.

Reduced Load

Other students may carry a lighter course load than that defined by the standard curriculum, so that the degree requirements are completed in five years instead of four. The recommended option continues a schedule of 12 to 15 credits each semester and leads to a degree 5 years after admission. A five year schedule is recommended for those students who want a reduced course load to provide sufficient time for a part-time job, sports, or other extracurricular activities. Many students who start on the standard 4 year engineering curriculum later find it necessary to extend their program to 4 1/2 years or 5 years. For many students it is better to plan on a 5 year schedule from the beginning.

Cooperative Education and Internships in the College of Engineering

College of Engineering students have the opportunity to gain valuable work experience with industry and government agencies, before graduation. Working as engineers in industry or government agencies can provide engineering students with an exceptional educational experience.

We encourage students majoring in any of the engineering fields to participate in co-op or engineering internship opportunities.

Cooperative Education

Through cooperative education, students alternate work and school sessions. Co-op students often earn substantial income while completing their degree. This can reduce the financial burden of a college education. Furthermore, co-op students frequently are offered higher starting salaries after graduation. Meaningful, "real world" work experience often improves learning by providing practical connections for classroom theory. Technical work experiences can also help students make better choices of courses or career paths.

Eligible Students

Civil and Environmental Engineering, Computer Engineering, Computer Science, Electrical Engineering, and Mechanical Engineering students who have a minimum 2.75 G.P.A. at the end of the first semester of the freshman year are eligible for the co-op option. They are invited to attend special seminars which prepare them for interviewing and for working in industry.

Those who choose to participate in co-op arrange interviews with co-op companies in March and April. Selection for work assignments is made by the employers and therefore cannot be guaranteed. However, students who are somewhat flexible about the nature and location of the assignment usually will not have difficulty obtaining one. Faculty make every effort to see that each student is placed.

In order to remain in the co-op option, students must maintain satisfactory work performance and maintain a 2.5 minimum cumulative grade point average while making satisfactory progress toward their degree. While working for a company, students must abide by the rules and regulations of their employer. In addition, students on work assignment must have appropriate health insurance as specified by the university.

Schedule

Co-op students alternate work and school every other session until the first semester of the senior year. They are split into two approximately equal groups, shown as A and B in the table. One group begins with a work session while the other starts with first semester sophomore courses.

Option A

fall	sprg	sumr
F1	F2	W
So1	W	So2
W	J1/J2	W
J2/J1	W	E
Sr1	Sr2	

Option B

fall	sprg	sumr
F1	F2	So1
W	So2	W
J1	W	E
W	J2	W
Sr1	Sr2	

Key

W	Co-op work session
F1, F2	Fresh semester 1 & 2
So1, So2	Soph. semester 1 & 2
J1, J2	Junior semester 1 & 2
Sr1, Sr2	Senior semester 1 & 2
E	Extra sessions, for electives or to fill in requirements

There are nine academic sessions in co-op. Because of the enforced schedule, students should plan their programs of study carefully in order to get the courses they want. Students complete five work sessions. (One work session can be waived in writing by the Dean of the College of Engineering, only in cases of great hardship.)

Students who satisfactorily complete all of the requirements of their degree and the co-op option will be certified on their transcripts as having completed the engineering co-op.

Internships

Many faculty in the College of Engineering at UMass Dartmouth have excellent relationships with engineering employers in the region and nation, generating many opportunities for engineering internships. In addition, students often contact employers directly and arrange internships with the assistance of faculty advisors.

An internship is a supervised, practical learning experience, usually occurring during the last two years of the student's program. For students in the College of Engineering, an intern would be employed to do engineering work with a company or government agency while earning university credit. Supervision would be provided by the company or agency, and the work would be done outside the university *except in exceptional circumstances.* A faculty advisor monitors the internship and works with the company or agency to see that the work is appropriate for the course credit being given.

Each department in the college of engineering has an Engineering Internship course which can be used as at least 3 credits of technical electives (CEN 400, ECE 400, or MNE 400). In order for a student to enroll in one of these courses, the work activity must provide a learning experience equivalent to that obtained in a typical technical elective. The student must file a proposal detailing the work and learning experience for approval by their internship advisor before the experience begins. The student should keep a daily journal history of the work done and send copies or a written summary report to the advisor each week. The student must submit a summary report on the work experience before credit can be given. The individual courses may have other requirements which also must be met, as found in the course listings. Co-op students can use one of these engineering internship courses to obtain credit for a qualified work session experience.

A work experience which does not qualify for technical elective credit may be able to qualify as an Contract Learning Internship and earn free elective credit under the rules of the Contract Learning Program administered through the Office of Career Services. College of Engineering interns in this program must meet the advising, proposal and report writing requirements of the previous paragraph in addition to the requirements of Contract Learning.

Internships are usually done part time while the student continues taking classes; however, some internships are full time for a semester or more and may be far from campus. In those cases the intern may not be able to enroll in other courses. However, students enrolled in a university-recognized internship must have appropriate health insurance as specified by the university regardless of internship work location and the number of credits.

Engineering Core Courses

The following courses are taken in common by students in some of the majors in the college.

EGR 100 three administrative credits*
Freshman Engineering Laboratory
Prerequisite: High school algebra, geometry, and trigonometry

An introduction to the skills and practices in engineering. This course encourages incoming and potential students to gain insight and experience in engineering by their participation in demonstrations and experiments from the engineering disciplines.

EGR 103 three credits
Introduction to Applied Science and Engineering I

Introduction to engineering through (1) the incorporation of curriculum integration, (2) human interface active learning, and (3) technology based education. The emphasis is on written, oral, and graphical communications skills; team teaching and teamwork; and multimedia design case studies.

EGR 104 two credits
Introduction to Applied Science and Engineering II

Introduction to the synergistic integration of engineering with electronics and computers in design and control. Electrical elements; electrical measuring devices; sensors and actuators; data acquisition; logic devices.

EGR 107 three credits
Introduction to Engineering Through Applied Science I

An introduction to engineering and applied science that emphasizes development of engineering problem-solving skills through work on team projects in engineering mechanics. The course applies calculus and physics problem-solving skills to projects that are directed by faculty from the Civil and Environmental Engineering and Mechanical Engineering departments. The course develops team work, written, oral and graphical communication skills and uses computer assistance with an emphasis on engineering graphics.

* administrative credits do not count towards the total required for graduation

Gen Ed note: Engineering courses satisfy the Natural Science and Technology requirement. Those marked **S** below are appropriate for non-science/engineering majors.

Engineering Courses for all UMass Dartmouth Students

EGR 108 two credits
Introduction to Engineering Through Applied Science II

An introduction to engineering and applied science that emphasizes development of engineering problem-solving skills through work on team projects in DC and AC circuits, electromagnetics, and computer measurement and control. The course applies calculus and physics problem solving skills to projects in the Computer Engineering, Electrical Engineering and Mechanical Engineering disciplines. The course develops teamwork, written and oral communication skills and uses computer tools (Electronic Workbench and MATLAB) for analysis and simulation.

EGR 221 one credit
Materials Science Laboratory
3 hours laboratory
Corequisite: EGR 231

Properties of materials studied in a series of experiments. Supplements the course material in EGR 231 Materials Science.

EGR 231 three credits
Materials Science
3 hours lecture
Prerequisite: CHM 152

A fundamental treatment of engineering materials. Properties are discussed on the basis of material structure. Metallic, organic and ceramic materials are compared and applications are presented. Phases and phase relationships in binary systems are introduced. Solid state reactions and modifications of properties through change in micro-structure are studied. Stability of materials in service environments is analyzed on the basis of material structure.

EGR 232 three credits
Principles of Thermodynamics
3 hours lecture
Pre- or corequisites: CHM 152, MTH 211

A single semester comprehensive course in thermodynamics for non-Mechanical Engieering majors. The fundamentals of classical thermodynamics are presented. The first and second laws are formulated and applied to basic engineering systems. Properties of pure substances, their calculation and measurement are explored. Formulae and concepts for evaluating efficiency are derived. The combined first and second laws are used to develop the concepts of useful work, availability and exergy. Engineering applications are discussed and studied as time allows.

EGR 241 three credits
Engineering Mechanics I: Statics
3 hours lecture
Prerequisites: PHY 113, MTH 112

The first course in engineering mechanics, with two major objectives: first, to introduce the student to the science of engineering mechanics and second to introduce the student to the art of applying science to the solution of engineering problems. The specific vehicle or curriculum to accomplish these objectives will be a study of the statics of rigid bodies.

EGR 242 three credits
Engineering
Mechanics II: Dynamics
3 hours lecture
Prerequisites: EGR 241, MTH 211;
Corequisite: MTH 212

A continuation of the study of mechanics initiated in EGR 241. Work and energy methods are emphasized. Motion in accelerating coordinate systems and dynamics of system particles lead to the discussion of rigid body dynamics in three dimensions. A number of examples of rigid body motion are discussed. Free and forced vibrations of one degree of freedom, and free vibrations of multi-degree of freedom systems, are studied. The principle of virtual work is introduced and used to briefly discuss stability of equilibrium.

EGR 301 three credits
Applied Engineering Mathematics
3 hours lecture
Prerequisite: MTH 212

Mathematical methods useful to all engineering students. They include: elements of linear algebra, matrices, eigenvalue problems, systems of ordinary differential equations, Fourier series, partial differential equations, probability theory, mathematical statistics, and a brief introduction to complex numbers.

The following courses are offered by the College of Engineering as interdisciplinary courses or as courses that may satisfy distribution and science requirements.

EGR 101 three credits **S**
The Technical Nature of the Human Environment
3 hours lecture

Three consecutive five-week mini-courses, primarily for non-engineers, designed to develop an understanding of the technical nature of structures such as buildings and bridges, transportation systems, and environmental systems. (Formerly EGR 100.)

EGR 157 three credits **S**
Science of Engineering
2 hours lecture, 1 hour laboratory
Prerequisite: honors requirements (3.2 G.P.A. or by invitation)

The scientific principles underlying the practice of various engineering disciplines. This honors-level course is for non-science and non-engineering majors.

EGR 203 three credits **S**
Environmental Geology
3 hours lecture

A brief outline of earth's development to the present and basic materials of geology—rocks, minerals, and geological processes. The course examines how geologic processes and hazards influence human activities, the geologic aspects of pollution and waste disposal problems, etc. Prior exposure to geology or college-level math or science are not necessary.

Civil and Environmental Engineering

Civil and environmental engineering is the engineering of constructed facilities; of buildings, bridges, tunnels, and dams; of harbors and airports; of waterways, railways, and highways; of water power, irrigation, drainage, and water supply; of wastewater and hazardous waste disposal and environmental health systems. Civil Engineers are the professionals who plan, design, direct the construction, and often maintain these facilities.

Goals
The primary goal of the Civil Engineering Program at UMass Dartmouth is to provide the academic preparation necessary for students to be able to enter the profession at the engineer intern level and continue in the practice of civil and environmental engineering. The program also has the goal of providing the necessary academic preparation for students to be able to continue their education at the graduate level. The program is accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology.

Objectives
To meet the above goals, the Department has the following program objectives:

• To provide each student with a thorough grounding in mathematics, the basic sciences, and the engineering sciences.

• To provide each student with a broad background in civil and environmental engineering by introducing each of the engineering specialties within civil and environmental engineering.

• To provide each student with the opportunity to gain some depth of understanding in two or more of the following specialties: environmental engineering; geotechnical engineering; structural engineering; transportation engineering or water resources engineering.

• To provide each student with the opportunity to undertake a major design project while working in a team environment with peers.

• To provide each student with an understanding of the social implications and humanistic meanings of his or her place in society as both a citizen and a professional.

The department also participates in the college's co-op program.

Faculty and Fields of Interest

Neil Fennessey hydrology, water resources engineering

Thomas Paul Jackivicz environmental engineering, surveying

Madhusudan Jhaveri geotechnical engineering, solid mechanics

Sat Dev Khanna (chairperson) hydraulic engineering, water resources, environmental engineering

Frederick M. Law structural engineering

Heather J. Miller geotechnical engineering

Walaa S. Mogawer transportation engineering

Sukalyan Sengupta environmental engineering

Civil Engineering Major
BS degree

The academic preparation for a profession which is as varied as civil and environmental engineering requires considerable breadth as well as depth. The department provides this breadth and depth through its stated goals and objectives. Each student's program includes a sequence of technical electives which are a combination of engineering sciences and engineering design that culminates in a meaningful major design experience. To better prepare the student to take his or her place as a citizen as well as a professional, the curriculum is also designed to include a number of courses in the humanities and social sciences.

Civil Engineering Certificate Programs

The UMass Dartmouth Department of Civil and Environmental Engineering participates along with Massachusetts Maritime Academy and Cape Cod Community College in four Certificate programs:

• Environmental Site Assessment Certificate
• Wastewater Management Certificate
• Coastal Zone Management Certificate
• Geographical Information Systems (GIS) Certificate.

For further information, contact the UMass Dartmouth Continuing Education Office, extension 8071, or Environmental Technology Program, Cape Cod Community College, West Barnstable, MA 02668; phone 508 362-2131.

Requirements

Semester Credits

		First	Second
First Year			
ENL 101, 102	Critical Writing and Reading I, II	3	3
CHM 151, 152	Principles of Modern Chemistry I, II	3	3
CHM 161, 162	Intro Applied Chemistry Engineers I, II	1	1
MTH 111, 112	Analytical Geometry and Calculus I, II	4	4
PHY 113	Classical Physics I		4
CEN 161	Civil Engineering Design Graphics	3	
CEN 252	Ethics and Professionalism		1
		14	**16**
Second Year			
EGR 241, 242	Engineering Mechanics, I*, II	3	3
MTH 211, 212	Calculus III, Differential Equations	4	3
CEN 201	Surveying		3
CEN 211	Surveying Laboratory		1
CEN 302	Mechanics of Materials		3
CEN 312	Mechanics of Materials Lab		1/2
PHY 114	Classical Physics II	4	
CIS 261	Principles of Computer Programming	3	
ENL 266	Technical Communications	3	
	General Education Elective		3
		17	**16 1/2**
Third Year			
CEN 303	Fluid Mechanics	3	
CEN 313	Fluid Mechanics Laboratory	1	
CEN 307	Structural Theory	3	
CEN 309	Introduction to Transportation	3	
CEN 403	Soil Mechanics	3	
CEN 413	Soil Mechanics Laboratory	1	
ECE 211	Elements of Electrical Engineering I	3	
CEN 304	Sanitary and Environmental Engineering		3
CEN 310	Construction Materials Lab		1/2
CEN 314	Sanitary and Environmental Engineering Lab		1
CEN 308	Structural Engineering		3
EGR 232	Engineering Thermodynamics		3
	Technical Elective		3
	General Education Elective		3
		17	**16 1/2**
Fourth Year			
CEN 402	Engineering Economy*	3	
	Technical Electives	6	6
	Advanced Math Elective	3	
CEN 491	Civil Engineering Project**	1	2

* offered in both semesters

** two semester course, grades awarded in spring semester;one credit first semester; two credits second semester

Technical Electives

All Civil Engineering majors must complete a minimum of 5 technical elective courses. They will select these courses from the lists below, according to a plan that is developed in consultation with the departmental advisor. Each student's plan must reflect a balance between Group I and Group II courses. The plan will also reflect an appropriate selection within five areas of emphasis.

Areas of emphasis

water resources
environmental
structural
transportation
geotechnical

Group I Electives

CEN 311 Water Resources Engineering
CEN 321 Structural Analysis
CEN 400 Engineering Internship*
CEN 411 Water Quality Engineering
CEN 421 Matrix Methods of Structural Analysis
CEN 433 Special Topics in Geotechnical Engineering
CEN 434 Traffic Engineering
CEN 453 Hydrology
CEN 495 Independent Study Internship
CEN 496 Directed Study

Group II Electives

CEN 412 Pollution Control of Wastes
CEN 422 Design of Structural Systems
CEN 423 Design of Foundations and Earth Structures
CEN 432 Pavement Design
CEN 443 Computer-Aided Water Resources Design
CEN 298 Experiential Learning internship*

*Normally a free elective unless approved by the department to be a Technical Elective

Math Electives

EGR 301 Applied Engineering Mathematics
MTH 321 Topics in Applied Math I
MTH 331 Probability
MTH 361 Numerical Analysis I
MTH 463 Modelling
CEN 463 Computer Aided Math for Civil Engineers

Civil and Environmental Engineering Courses

Gen Ed note: Civil Engineering courses satisfy the Natural Science and Technology requirement.

CEN 161 three credits
Civil Engineering Design Graphics
2 hours lecture, 4 hours laboratory

The standard graphical means of communication between the civil engineer and the constructor are introduced. The students' graphic communication skills are developed including the ability to use computer-aided graphic systems.

CEN 201 three credits
Surveying
3 hours lecture

A study of the theory and practice of plane surveying as applied to property, topographic, and engineering surveys, including curves, error theory and earth-work as related to civil engineering projects.

CEN 211 one credit
Surveying Laboratory
3 hours laboratory
Corequisite: CEN 201

Consists of field practice to understand and supplement the CEN 201 course contents.

CEN 252 one credit
Ethical, Professional, and Safety Issues
1 hour lecture

The professional nature of engineering and the code of ethics which governs its practice. Safety issues pertaining to field practice by civil engineers will be covered. The safety segment will help students to develop the skills and theory they need to make competent on-the-job decisions, improving job performance relating to professional practice, specifically outdoors, and will emphasize safety for all workers in the field.

CEN 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

CEN 302 three credits
Mechanics of Materials
3 hours lecture
Prerequisite: EGR 241

The behavior of materials and members under axial load, torsion, flexure, shear and combined loads, including the deflection of beams and buckling of columns. The relationship between stress and strain, principal stresses and strains and yield and fracture criteria are discussed.

CEN 303 three credits
Fluid Mechanics
3 hours lecture
Prerequisite: EGR 242

The mechanics of fluids, fluid properties, fluid statics. Kinematics and dynamics of flow fields are developed. Dimensional analysis, metering, laminar and turbulent flows will also be discussed. Emphasis is placed on energy equations with applications to closed conduit and open channel flow problems. Boundary layer concepts and drag and lift forces on submerged bodies are also considered.

CEN 304 three credits
Sanitary and Environmental Engineering
3 hours lecture
Prerequisites: CEN 303, CHM 152

Introduction to the sanitary engineering field. The environmental problems of urbanization and the natural cycle of water are discussed. Elementary hydrology, physical, chemical and biological principles of the treatment of water and wastewater are covered. Municipal services—water mains, sanitary sewers and storm water drainage, layout and operation of purification and treatment works are studied in detail. In addition, state and federal regulatory standards are introduced and discussed.

CEN 307 three credits
Structural Theory
3 hours lecture
Prerequisite: CEN 302

The methods of structural analysis and design of reinforced concrete beams, columns, frames, and one-and two-way slabs are formulated and discussed. Emphasis is placed on giving the student an understanding of the general behavior of statically indeterminate structures as well as the specific behavior of reinforced concrete members.

CEN 308 three credits
Structural Engineering
3 hours lecture
Prerequisite: CEN 307

The field of structural engineering is introduced through a study of the methods of structural analysis and design of steel structures using the Load and Resistance Factor Design Method. Emphasis is placed on giving the student an understanding of the general behavior of all structures as well as the specific behavior of structural steel members.

CEN 309 three credits
Introduction to Transportation Engineering Systems
3 hours lecture
Prerequisites: PHY 113, CEN 201

A comprehensive overview of the characteristics of transportation systems. Concepts in major areas such as geometric design, human factors, traffic engineering simulation, and transportation planning and evaluation, including travel behavior and socio-economic effects, will be introduced. Principles of highway construction and design will be included.

CEN 310 one-half credit
Construction Materials Lab
3 hours laboratory
Corequisite: CEN 309

A series of laboratory experiments aimed at measuring the engineering properties of asphalt, asphalt concrete and concrete to supplement the theory covered in CEN 309.

CEN 311 three credits
Water Resources Engineering
3 hours lecture
Prerequisite: CEN 303

Elementary surface and groundwater hydrology, pressure flow and open channel flow fundamentals. Topics include basic probability and statistics with a water resources emphasis, watershed based and site drainage concepts, natural and constructed open channel systems, reservoir routing and design, analysis and management issues. Also covered are the analysis and design of pressure flow systems, dam spillways, energy dissipaters and stilling basins. An integrated, systems analyses approach to water resources engineering is emphasized.

CEN 312 one half credit
Mechanics of Materials Laboratory
3 hours laboratory
Corequisite: CEN 302

Laboratory experiments conducted to investigate the physical characteristics of materials and to verify the assumptions made in the course Mechanics of Materials, CEN 302.

CEN 313 one credit
Fluid Mechanics Laboratory
3 hours laboratory
Corequisite: CEN 303

Laboratory experiments supplementing the theory course CEN 303 Fluid Mechanics, with the objective of introducing the student to the field of fluid observations and experimentation.

CEN 314 one credit
Sanitary and Environmental Engineering Laboratory
3 hours laboratory
Corequisite: CEN 304

Laboratory experiments in the testing of water and wastewater. Supplements the theory course CEN 304.

CEN 321 three credits
Structural Analysis
3 hours lecture
Prerequisite: CEN 307

Deflections by singularity function, method of conjugate beams, influence lines of determinate and indeterminate beams and trusses, approximate analysis of indeterminate structures, analysis of beams and frames of non-prismatic members.

CEN 400 three credits
Civil Engineering Internship

Training experience for civil engineering majors at various institutions/agencies recognized by the department. Internship proposals must be approved by the department chair.

CEN 402 three credits
Engineering Economy
3 hours lecture
Prerequisite: MTH 112

A study of the principles involved in the analysis of proposed investment in capital assets for decision-making. Emphasis is placed on techniques for economy studies of multiple alternatives, uncertainties in forecasts, increment costs, taxes, retirement and replacement. Current economic issues, overview of economic decision-making and investment are also discussed. Enrollment is normally limited to engineering seniors.

CEN 403 three credits
Soil Mechanics
3 hours lecture
Prerequisite: CEN 302
Corequisite: CEN 303

Physical and mechanical properties of soils including weight-volume relationships, index and classification properties, compaction, permeability and consolidation characteristics. Effective stresses and soil strength parameters are also discussed.

CEN 411 three credits
Water Quality Engineering
3 hours lecture
Prerequisite: CEN 304

Factors influencing the physical, chemical, and biological characteristics of surface and ground waters. Unit operations and processes related to water treatment are emphasized.

CEN 412 three credits
Pollution Control of Wastes
3 hours lecture
Prerequisite: CEN 411

The nature and causes of wastewater pollutants and the biological, chemical, and physical characteristics of these wastes. The analysis, treatment, and disposal of domestic, municipal, and industrial wastes are studied. Design of wastewater collection, pumping, and treatment facilities are practiced.

CEN 413 one credit
Soil Mechanics Laboratory
3 hours laboratory
Corequisite: CEN 403

Laboratory experiments in testing of various types of soils. Supplements the theory course CEN 403.

CEN 421 three credits
Matrix Methods of Structural Analysis
3 hours lecture
Prerequisite: CEN 307

Fundamental matrix algebra including inversion of matrices. Stiffness matrices for spring assemblages, trusses, beams, and planar frames. Introduction to flexibility method. Computer programs are used by students to solve matrix equations.

CEN 422 three credits
Design of Structural Systems
3 hours lecture
Prerequisite: CEN 308

For students interested in a career in structural engineering, gives a basic understanding of the behavior of various two and three dimensional load carrying structural systems and also some means by which they can compare alternate structural systems. Design concepts, design assumptions, and methods of analysis are stressed. The selection of the optimum system for a particular type structure is also discussed.

CEN 423 three credits
Design of Foundations and Earth Structures
3 hours lecture
Prerequisites: CEN 307, 403

The design of shallow foundations (spread footings and mat foundations), deep foundations (piles and drilled shafts), and retaining walls. Emphasis is placed on considerations of bearing capacity and, settlement and stability. The design of braced cuts and lateral earth support systems is also discussed.

CEN 432 three credits
Pavement Design
3 hours lecture
Prerequisite: CEN 309

Provides a comprehensive understanding of pavement design. Basic principles and various design methods of pavements will be introduced. Major topics to be covered are stresses in flexible and rigid pavements, AASHTO design method for flexible and rigid pavements, design of overlays, design of airports, and other design methods of flexible and rigid pavements.

CEN 433 three credits
Special Topics in Geotechnical Engineering
3 hours lecture
Prerequisite: CEN 403

Selected topics of special interest in geotechnical and geoenvironmental engineering. Topics will include geotechnical aspects of landfill design, design principals and uses of geosynthetics for drainage systems, separation, and soil reinforcement,

slope stability analysis, and various other techniques for soil stabilization and site improvement.

CEN 434 three credits
Traffic Engineering
3 hours lecture
Prerequisite: CEN 309

Introduction to the concepts of movement control. Discussion and quantitative appraisal of the characteristics of the transport user, the vehicle, the road, the navigation and control systems. Written and oral reports are assigned on field data collections and evaluations of typical control problems, traffic studies, road user reactions, and potential future transport systems.

CEN 443 three credits
Computer-Aided Water Resources Design
3 hours lecture
Prerequisite: CEN 311

Explores the relationship of hydrology and hydraulics, with the ultimate goal of designing a project. The concepts of precipitation, runoff, and hydrograph analysis and synthesis are emphasized. Additional topics include frequency analysis, flood routing, hydrologic synthesis and simulation techniques for large basins as well as urban and small watersheds. Topics also included are: backwater curves, submerged weirs, and water hammer. All subjects are primarily focused in developing and designing a comprehensive hypothetical water-resources project with computer use as cornerstone.

CEN 453 three credits
Hydrology
3 hours lecture
Prerequisite: CEN 303

This is a senior/graduate level course offering designed to provide the student with a comprehensive exposure to the science of physical and statistical hydrology. The goal of the course is to empower the individual with tools necessary to develop expertise in watershed and water resources systems design, planning, and management.

CEN 491 three credits
Civil Engineering Project
Prerequisites: Senior status
One credit in fall, two in spring

Final design experience, requiring practitioner involvement. Student reports and oral presentations are an integral part of the course. A team approach/team design project with an interdisciplinary flavor is strongly recommended.

CEN 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

CEN 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Computer and Information Science

Students who major in computer science are given a strong background in computer hardware and software, as well as a substantial amount of "hands-on" experience. They are prepared to work both in computer industry and business as well as pursue graduate studies in the discipline. The undergraduate program is accredited by the Computer Science Accreditation Board. Both major and minor programs are offered.

Qualified computer science majors can benefit from the Cooperative Education program offered in cooperation with the local computer industry.

The CIS department also offers a Master of Science Degree in Computer Science with broad range of required and elective courses in theoretical computer science, computer systems, software engineering, parallel and distributed computing, and computer networks. See the *Graduate Catalogue* for information.

Faculty and Fields of Interest

Jan Bergandy distributed systems, software engineering, theoretical computer science

Paul Bergstein object-oriented programming, databases

John W. Gray digital systems design, computer architecture, software tools

Robert Green software engineering, parallel architectures (on leave, associate provost for computer and information technology)

Adam O. Hausknecht symbolic manipulators, foundations of computer science

Boleslaw Mikolajczak (chairperson) algorithms and complexity, parallel and distributed processing, computer architecture, theoretical computer science

Gopalan Sampath programming languages, algorithms

Arturo Sanchez-Ruiz software engineering, programming languages

Edmund B. Staples analysis of algorithms, mathematical applications, logical methods, and complexity theory

Richard Upchurch social implications, software engineering, human-computer interaction

Computer Science Major

BS degree

The Computer Science bachelor's degree program is accredited by the Computing Sciences Accreditation Board.

A wide selection of courses offers experience in software engineering, computer languages, artificial intelligence, compilers, computer networks, operating systems, computer architecture, computer graphics, parallel computing, human computer interaction and data bases, as well as theoretical aspects. The undergraduate computer science curriculum is object-oriented, lab intensive, and directed toward software development. The courses are supported by a network of state-of-the-art workstations and various specialized laboratories.

Humanities, Literature, and Social Science Requirements for Computer Science Majors

Literature—6 credits
Literature in English, literature in a foreign language, or foreign literature in translation.

Humanities/Social Science—18 credits
From the areas of Humanities and Social Sciences below, with a minimum of six credits from each area:

Humanities: History, Philosophy (including logic); Art and Music (Excluding applied courses), and Foreign Language (excluding literature).

Social Science: Economics, Political Science, Psychology, and Sociology.

Women's Studies courses receive either social science or humanities credit, depending on the discipline of the course with which they are cross-listed.

Note: This is a restructured curriculum applicable to Fall 1997 new freshmen and beyond.

Requirements

		Semester Credits	
First Year		**First**	**Second**
ENL 101, 102	Critical Writing and Reading I, II	3	3
MTH 111, 112	Analytical Geometry and Calculus I, II	4	4
CIS 180	Object-Oriented Programming	4	
CIS 181	Programming Paradigms		4
	Humanities/Social Science Electives	3	3
		14	**14**
Second Year			
CIS 270	Computer Organization and Design	4	
CIS 271	Systems Software		4
MTH 181, 182	Introduction to Discrete Structures I, II	3	3
CIS 280	Software Specification and Design		4
PHY 113, 114	Classical Physics I, II	4	4
	Humanities/Social Science Elective	3	
		14	**15**
Third Year			
CIS 360	Algorithms and Data Structures	3	
CIS 361	Models of Computation		3
CIS 362	Empirical Methods		3
CIS 370	Design of Operating Systems	4	
ENL 266	Technical Communications	3	
MTH 331	Probability	3	
	Humanities/Social Science Electives	3	3
	Science Elective		3
	Literature Elective		3
		16	**15**
Fourth Year			
CIS 480	Software Engineering	4	
CIS 481	Parallel and Distributed Software Systems		3
	Technical Electives	3	4
	Technical Electives	3	3
	Literature Elective		3
	Humanities/Social Science Elective	3	
	Free Electives	3	3
		16	**16**
	Total credits:		**120**

The requirements for completion of a Bachelor of Science degree in computer science are:

1.
Complete the following CIS core courses, each with a grade of "C" or better.

CIS 180 Object-Oriented Programming
CIS 181 Programming Paradigms
CIS 270 Computer Organiz. &Design
CIS 271 Systems Software
CIS 280 Software Specification & Design
CIS 360 Algorithms and Data Structures
CIS 361 Models of Computation
CIS 362 Empirical Meth. Computer Sci.
CIS 370 Design of Operating Systems
CIS 480 Software Engineering
CIS 481 Parallel & Distrib. Software Syst.

2.
Complete four additional courses from the following CIS technical electives, each with a grade of 'C' or better:

CIS 312 Programming Language
CIS 314 Computer Architecture
CIS 412 Found. Artificial Intelligence
CIS 421 Intro. Theory of Computing
CIS 422 Design of Parallel Algorithms
CIS 431 Human-Computer Interaction
CIS 443 Process-based Design
CIS 452 Database Systems
CIS 454 Computer Graphics
CIS 471 Compiler Design
CIS 475 Computer Networks

3.
Complete the following non-CIS courses:

ENL 101 Critical Writing and Reading I
ENL 102 Critical Writing and Reading II
ENL 266 Technical Communications
MTH 111 Analytical Geometry & Calculus I
MTH 112 Analytical Geometry & Calculus II
MTH 181 Discrete Structures I
MTH 182 Discrete Structures II
MTH 331 Probability
PHY 113 Classical Physics I
PHY 114 Classical Physics II
SOC 381 Social Impact of Sci. & Techn.

4.
Complete the humanities, social science, science, and literature requirements for the Bachelor of Science degree.

5.
Complete 6 hours of free electives. It is recommended that students use these hours to broaden their education, complete a minor or major in another discipline, or take additional CIS or related electives consistent with their career interests.

6.
Complete the requirement for upper-division courses for the Bachelor of Science Degree: at least 30 hours of courses numbered over 300.

Computer Science Minors

Students interested in a minor should contact the CIS department for an application and admission requirements. The department offers three different minors, each with the emphasis indicated. Each requires credits as specified below.

Admission to one of the minors

Students must meet the university's admission requirements for a minor, which include having completed 54 credits. For computer science, prospective minors are encouraged to inquire and plan their minor program prior to earning 54 credits, because the structure of requirements could necessitate the use of more than four semesters. Courses completed prior to formal declaration will count toward the minor program.

Admission to the minor is accomplished through an application form available in the office of the chairperson of the department accompanied by current transcript(s). Upon acceptance the student is assigned an advisor, who works with the student to design an individual minor program that meets the stated requirements. Study plans are to be approved by the department chairperson.

Computer Science

Objectives

1. To develop in the student an understanding of computer science as a discipline, its structure, methodologies, and trends.
2. To use the computer as a tool to solve problems.
3. To give the student a sufficient background in computer science to continue his/her study of the discipline independently.
4. To give students a sufficient knowledge in computer science to gain an advantage when entering the current job market.

Requirements

Complete the following courses with a grade of C or better:

		credits
CIS 180	Object-Oriented Programming	4
CIS 181	Programming Paradigms	4
CIS 280	Software Specif. & Design	4
CIS 360	Algorithms & Data Structures	3
CIS 361	Models of Computation	3
CIS	One additional 300/400 course	3
	Totals	21

Students with prior experience in programming can substitute CIS 183 Object Paradigm for the sequence of courses CIS 180/181. Students can substitute the sequence CIS 115 Computer Programming in C / CIS 215 Program Design and Data Structures for the sequence CIS 180 / 181.

Software Engineering

Objectives

1. To develop in the student the ability to use software development methodologies and software processes to participate in the design and implementation of software systems.
2. To teach the student how to design and implement software.
3. To give the student a sufficient background in software engineering to continue his/her study of the discipline independently.
4. To give students a sufficient knowledge in software engineering to gain an advantage when entering the current job market.

Requirements

Complete the following courses with a grade of C or better:

		credits
CIS 180	Object-Oriented Programming	4
CIS 181	Programming Paradigms	4
CIS 280	Software Specif. & Design	4
CIS 480	Software Engineering	4
CIS 481	Parallel & Distr. Softw. Systems	3
CIS	One additional 300/400 course	3
	Total	22

CIS 480 has as a prerequisite CIS 362 Empirical Methods. Students without a knowledge of empirical methods equivalent to CIS 362 must take that prerequisite course.

Students with prior experience in programming can substitute CIS 183 Object Paradigm for the sequence of courses CIS 180/181.

System Software

Objectives

1. To develop in the student the ability to use computer systems and system software and participate in the design and implementation of operating systems and computer networks.
2. To give the student a sufficient background in systems software to continue his/her study of the discipline independently.
3. To give students a sufficient knowledge in operating software and computer networks to gain an advantage when entering the current job market.

Requirements

Complete the following courses with a grade of C or better:

		credits
CIS 115	Computer Programming with C	3
CIS 215	Program Design/Data Str. w/ C	3
CIS 270	Computer Organiz. & Design	4
CIS 271	System Software	4
CIS 370	Design of Operating Systems	4
CIS 475	Computer Networks	3
CIS	One additional 300/400 course	3
	Total	24

Gen Ed note: Computer Science courses satisfy the Natural Science and Technology requirement.

CIS 110 three credits
Computer Literacy

An introduction to computers, evolution of computer systems and the impact of computers on the society. In this hands-on laboratory course, students will use Macintosh computers to learn about components of computer systems and study various applications including word processing, spreadsheet, database, presentation and internet browsing software. With the HyperCard, students will learn how to design and program in the multimedia environment. Each student will then use this knowledge to develop an individual final project for the course.

CIS 111 three credits
Computer Programming with Pascal

Algorithm development, syntax and semantics of a high level programming language, debugging and verification of programs. Concepts of structured programming. Arrays, subroutines. Elementary system concepts.

CIS 112 one credit
Freshman Seminar

Structure of Computer Science as a discipline, and introduction to computer systems organization.

CIS 115 three credits
Computer Programming with C

Algorithm development, syntax and semantics of a high level programming language, debugging and verification of programs. Concepts of structured programming. Arrays, subroutines. Elementary system concepts (compilation, time-sharing).

CIS 161 three credits
Computer Programming BASIC

An elementary programming course designed for the student with no prior experience in data processing. Programming Language: BASIC.

CIS 180 four credits
Object-Oriented Programming
3 hours lecture; 2 hours laboratory

Basic concepts in programming, and introduction to the object paradigm. The course introduces the concept of the object paradigm and teaches how to design and implement simple programs in an object-oriented language. The course also covers the basics of how to use a computer and basic software tools in the process of developing programs. The honors version of the course, in addition to the above contents, covers issues of human-computer interface design and the introduction to dynamic models in object-oriented software designs.

CIS 181 four credits
Programming Paradigms
3 hours lecture; 2 hours laboratory
Prerequisite: CIS 180

Software development using advanced object paradigm concepts; procedural paradigm; introduction to concurrency and fault tolerance. The course covers in depth the advanced topics of object paradigm such as inheritance polymorphism, and parametric polymorphism. These concepts are introduced in the context of developing software using software tools including the libraries of components. The procedural paradigm is introduced and compared with the object paradigm. The issues of programming with multiple processes, and programming of systems with exception handling capabilities are also addressed by this course.

CIS 183 four credits
Object-Oriented Paradigm
3 hours lecture; 2 hours laboratory

Introduction to the object paradigm. Software development using advanced object paradigm concepts of inheritance and polymorphism. Introduction to concurrency, and faulty tolerance. Developing software using software tools including the libraries of components. Comparison of procedural and object paradigms. Introduction to programming with multiple processes and with exception handling.

CIS 211 three credits
Introduction to Program Design and Data Structures with Pascal
Prerequisite: CIS 111 with grade of "C" or better

An introduction to the implementation of data structures in the programming language Pascal. Includes the use of multidimensional arrays, records and pointers. Each of theses language structures is used to construct and implement data structures such as lists, stacks, queues and trees. Special emphasis placed on the need for data abstraction and use of modularity to design operations on the given data structures. Allow students to investigate principles of proper program design and algorithm development, encounter, and explore issue of algorithm complexity (run-time, space, coding) in the context of search and sort algorithms.

CIS 212 four credits
Introduction to File Processing
Prerequisites: CIS 211

General files concepts. Sequential file processing, physical I/O vs. logical I/O, sort/merge, master file update. Random file processing, random master file update. Indexed file processing, index structures, single index files (ISAM) and multi-key files (VSAM).

CIS 213 three credits
Introduction to Computer Systems
Prerequisites: CIS 211, 214

Computer structure and machine language. Data representation, instruction cycle, addressing techniques. Assembly language: basic concepts, subroutines, parameters; assembly process and error messages. Fundamental functions of operating systems; linking, relocation, and I/O processing. Concept of concurrent processing (process communication, control switching, deadlocks).

CIS 214 four credits
Introduction to Computer Organization
Prerequisites: MTH 181, CIS 111

Basic digital circuits, data representation and transfer, register transfer logic, memory organization and design. Finite state machine as a control implementation. Distributed control; microprogramming. Methods of analysis and synthesis of digital systems. Problem of interfacing. I/O organization.

CIS 215 three credits
Program Design and Data Structures With C
Prerequisite: CIS 115

Program design issues, abstract data types, procedural and data abstraction issues. The following data structures are explored: linked lists, stacks, queues, binary trees, tables. Procedural abstractions such as: functions, recursive functions with variable number of parameters, are further discussed. Features of the C programming

language such as. preprocessor, macros, standard libraries, and programs with files are discussed.

CIS 221 three credits
Automata and Formal Languages
Prerequisites: MTH 182, CIS 211, 214

Discussion of classes formal languages such as regular, context-free, and recursively enumerable; and the associated abstract machines: finite automata, pushdown automata, and Turing machines. Examples of applications of these concepts, such as arithmetic evaluation, stack mechanisms for procedure calls and PLA's; the historical influence of the Universal Turing Machine.

CIS 260 one credit
Fortran
Prerequisite: CIS 111

Designed to teach problem-solving using the language Fortran. The course assumes a knowledge of PASCAL.

CIS 261 three credits
Computer Programming-Fortran
Corequisite: MTH 101, 105, or 111

A course designed to give the student familiarity with digital computer methods and programming with emphasis on Fortran.

CIS 265 three credits
Program Design and Data Structures with C
Prerequisite: Any Programming Course

An intensive course in the "C" programming language with introduction to UNIX for students who are already proficient in another high-level programming language such as BASIC, FORTRAN, or PASCAL (preferred).

CIS 266 three credits
Object-Oriented Programming in C++
Prerequisite: Any programming course

Fundamental conceptual tools and their implementation of object-oriented design and programming such as: object, type, class, implementation hiding, inheritance, parametric typing, function overloading, polymorphism, source code reusability, and object code reusability. Object-Oriented Analysis/Design for problem solving. Implementation of Object-Oriented Programming paradigm is illustrated by program development in C++.

CIS 270 four credits
Computer Organization and Design
3 hours lecture; 2 hours laboratory
Corequisite: MTH 181

Laws of computer organization and design for RISC architectures. Interfaces between hardware and software are studied. Influence of instruction set on performance is presented. Design of a processor with pipelining is analyzed. Computer arithmetic is studied. Memory hierarchy and their influence on performance is documented. Elements of interfacing and I/O organization are included. The course has a design, implementation, and analytical components.

CIS 271 four credits
Systems Software
3 hours lecture; 2 hours laboratory
Prerequisite: CIS 270

Components of software used to run a computer. Course includes analysis, design and implementation of such systems software as assemblers, compilers, linkers, loaders, operating systems, debuggers, and macroprocessors. Software engineering of systems software is also presented. Relationship between machine architecture and system software is also presented. Decomposition into machine-independent and machine dependent components of system software is studied. The course has a strong project component.

CIS 280 four credits
Software Specification and Design
3 hours lecture; 2 hours laboratory
Prerequisite: CIS 181

Object-oriented analysis and design: methodologies and tools. The course focuses on methodologies of specification and design of software systems. It addresses the issues of user interface design and software prototyping. The course also presents the state of the art in the tool and environments supporting the front end of the software development cycle.

CIS 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

CIS 311 four credits
Software Engineering
Prerequisite: CIS 211

Development of large software systems. Requirements specification, design, implementation, and testing methodologies. Security and privacy of software. Software life-cycle with emphasis on control through documentation and review. Programming support environments. Organizational structures, project management and planning.

CIS 312 three credits
Programming Languages
Prerequisites: CIS 213, 221; or 271, 361

Global properties of programming languages such as binding time of constituents, scope of declaration, subroutines, coroutines, storage allocation. Run-time representation of program and data structures. Implementation of a high level language. Overview of translation and interpretation oriented languages.

CIS 313 three credits
Operating Systems
Prerequisite: CIS 314 or 270; CIS 265 recommended

Operating system organization and design of system modules. Command interpreters; system calls. Resource management: file systems, memory management, CPU scheduling, disk-drum scheduling, deadlock handling; protection.

CIS 314 four credits
Computer Architecture
Prerequisite: CIS 213 or 271

General organization of a computer system. Memory hierarchy. Emphasis on memory organization and management implementation. Local and long distance communication, bus, input-output organization and control. Programmed I/O and I/O processors. Interrupt handling. Processor organization; instruction set; arithmetic-logic unit; parallel and stack processors. Programmed and hardwired, central and distributed control.

CIS 321 three credits
Analysis of Algorithms
Prerequisites: CIS 212, 221; CIS 265 recommended

An analysis of the complexity of some of the fundamental algorithms in computer science. It introduces the concept of big O notation in the evaluation of algorithmic complexity in such areas as searching, sorting, graphs and arithmetic and algebraic algorithms. It also introduces advanced topics such as dynamic programming, heuristics algorithms, backtracking and NP-completeness.

CIS 360 three credits
Algorithms and Data Structures
Prerequisite: CIS 181

Comprehensive coverage of all major groups of algorithms, including divide-and-conquer, dynamic programming, greedy, backtracking, branch-and-bound, and parallel algorithms. Discussion of the design and implementation of complex, dynamic data structures. The course also covers an introduction to the functional paradigm.

CIS 361 three credits
Models of Computation
Prerequisites: CIS 181, MTH 182

Models of sequential, parallel, and distributed computations. The Chomsky hierarchy of formal languages and their accepting machines are studied in detail. The relationship of these languages and machines to computer programs is presented. Influence of a Turing machine and related formalisms on modern computing are studied. Decidability of decision problems is explained. Several models of parallel and distributed computations are introduced and compared.

CIS 362 three credits
Empirical Methods for Computer Science
Prerequisite: MTH 331

Topics and methods supporting an experimental approach to the study of issues in computer science and software engineering. Course covers the basic principles of experimental design and case study construction. Emphasis in the course is on the use of empirical methods for decision making and the evaluation of research in computer science and software engineering that employ empirical methods.

CIS 370 four credits
Design of Operating Systems
3 hours lecture; 2 hours laboratory
Prerequisite: CIS 271

Principles of modern operating systems and their design. Scientific principles and engineering rules of operating systems are explored. Process and storage management subsystems are analyzed in detail. Protection and security are taken into account in design. An introduction to distributed operating systems is also presented. This is a design and project based course with a laboratory component.

CIS 411 three credits
Seminar
Prerequisite: Senior CIS standing

Advanced topics in Computer Science.

CIS 412 three credits
Foundations of Artificial Intelligence
Prerequisite: CIS 321 or permission of instructor

Artificial intelligence problem-solving paradigms. Heuristic versus algorithmic methods, rational and heuristic approaches, description of cognitive processes. Objectives of work in artificial intelligence, midbrain problem and nature of intelligence, simulation of cognitive behavior and self-organizing systems. Examples of representative applications.

CIS 421 three credits
Introduction to the Theory of Computing
3 hours lecture
Prerequisite: CIS 321

Several of the most significant models of computation will be reviewed, i.e., Turing machines, 1-calculus, predicate calculus. The traditional undecidibility results will be covered, along with the attempts to overcome the resulting limitations in restricted situations. Mechanical theorem provers will be considered. The resolution and unification predicate calculus methods will be discussed along with appropriate PROLOG programming assignments. The Boyer-Moore approach will be discussed, along with LISP programming assignments.

CIS 422 four credits
Design of Parallel Algorithms
3 hours lecture, 2 hours laboratory
Prerequisites: CIS 314, 321; or permission of instructor

Design and analysis of algorithms for parallel computers with two modes of operation: shared memory, and message passing. Synchronous and asynchronous parallel algorithms for the following problems will be designed and implemented: selection, merging, sorting, searching, generating permutations and combinations, and matrix operations. Parallel computational complexity of these algorithms will be analyzed.

CIS 431 four credits
Human-Computer Interaction
3 hours lecture; 3 hours laboratory
Prerequisite: CIS 311 or permission of instructor

Theory and principles for constructing usable software systems. Cognitive and effective aspects of users. The impact of user characteristics on design decisions. The construction and evaluation of the user interface. Sensory and perceptual aspects of interfaces, task structure, input modalities, screen layout, and user documentation. Individual concerns for systems such as personal productivity tools, real-time control systems, instructional software, and games.

CIS 443 three credits
Process-Based Design
Prerequisites: CIS 314, 311; or permission of instructor

Design of systems composed of multiple, communicating processes (tasks), including distributed systems and real-time systems. Programming with ADA.

CIS 452 three credits
Database Systems
Prerequisite: CIS 212

Use of DBMS software in the development of an information system. Overview of the ANSI/SPARC Study Group on Database Management Systems model. Relational database model techniques. Emphasis on user views necessary to support data management and retrieval.

CIS 454 three credits
Computer Graphics
Prerequisites: Junior CIS standing and MTH 211; or consent of instructor

Graphics devices. Two dimensional and three dimensional image representations and transformations. Graphics systems software architecture; graphics standards; packages.

Note: Some graduate courses may be open to undergraduates. Please consult your department chairperson. See the *Graduate Catalogue* for graduate general and program requirements.

Graduate Courses in Computer and Information Science

CIS 471 three credits
Compiler Design
Prerequisite: CIS 312

Organization of a compiler including lexical and syntax analysis, symbol tables, object code generation, error detection and recovery, code optimization techniques, and overall design. Compilation techniques and run-time structures in block-structured language.

CIS 475 three credits
Computer Networks
Prerequisites: CIS 313, 314

Topology of computer networks. Physical transmission. Error handling. Protocols. Satellite, packet radio, and local networks. Network interconnection. Security. Applications of computer networks.

CIS 480 four credits
Software Engineering
3 hours lecture; 2 hours laboratory
Prerequisite: CIS 280

Software engineering models and processes; total quality management. The course will address the technical, logistical, and social issues associated with the software development process. It will cover the issues of total quality management at the team and enterprise levels.

CIS 481 three credits
Parallel and Distributed Software Systems
Prerequisite: CIS 280

Parallelism and distribution of processing; software bus concept; patterns in software design. The course provides an in-depth discussion of the software systems wit multiple processes and of the relationship between concurrency and distribution of processes. The concept of the software bus, the existing standards, and the issues associated with their implementation are covered.

CIS 491, 492 three credits each
Honors Project I, II
Prerequisites: Junior standing, eligible for department honors program

The project courses required for completion of the departmental honors program. A significant experience in developing a computer system (typically), but equivalent alternatives are allowed. This system should require an extensive design effort prior to implementation and a serious effort for this implementation. It should have scholarly and or practical value and might well profit by being interdisciplinary in nature.

CIS 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

CIS 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

CIS 521 three credits
Computability Theory
Prerequisite: CIS 421 or permission of instructor

Computability of sets and functions in terms of various computation models, Church-Turing thesis. Systems of recursion equations and Post canonical systems are studied. Properties of the classes of recursive functions, recursive sets, and recursively enumerable sets are also covered.

CIS 522 three credits
Algorithms and Complexity
Prerequisite: CIS 321 or permission of instructor

Evaluation of algorithms concerning their time and space complexity. Complexity hierarchies, axiomatic approach to compuuttional complexity, NP complete problems, approximation algorithms for these problems.

CIS 525 three credits
Parallel and Distributed Software Development
Prerequisite: CIS 221 or permission of instructor

Design and development of parallel and distributed systems. This course provides state-of-the art presentation of software development for parallel and distributed systems. A systematic model-based approach has been applied across stages of software development. Various versions of Petri nets are used to model , specify, validate, and verify correctness of parallel and distributed systems. Performance is also assessed based on stochastic Petri nets. Rapid protoyping of parallel and distributed systems with automatic code generation is an ultimate goal of his course. Comparison with other approaches is also provided.

CIS 526 three credits
Functional Programming and Type Theory
Prerequisite: CIS 321 or permission of instructor

Introduction to logic, type theory, and the lambda calculus. The course examines LISP as a first application of these ideas, consistency proofs using cut elimination and type theory, and constructive type of theory in functional programming languages in attempts to achieve program verification and automatic code generation.

CIS 531 three credits
Software System Specification
Prerequisite: CIS 311 or equivalent

Formal foundation of the theory and practice of software specification; production of correct, consistent, and reliable software systems by expressing the requirements of the system in formal ways. Formal and informal requirements analysis and specification techniques, the relation of analysis and specification to concerns of validation and verification, maintenance, and reusability.

CIS 532 three credits
Software Systems Design
Prerequisite: CIS 311 or equivalent

Principles and techniques for obtaining an architectural design from a system specification. Where appropriate, automated software design tools are used to demonstrate particular methodology. The relation of various design methods to the production of quality software that meets its specification, and the relation of design method to other life-cycle aspects. Design methods, design tools, the design process, and particular application domains for design techniques.

CIS 543 three credits
Software Systems Design with ADA
Prerequisite: CIS 443 or perm. of instructor

Software engineering principles and methodologies. Also considered are issues related to the life cycle of large systems developed in ADA, software engineering of real-time, fault-tolerant and distributed systems, and software reuse.

CIS 545 three credits
Programming Languages
Prerequisite: CIS 312 or perm. of instructor

Techniques of formal definition of programming languages, semantics of programming languages, programming styles, and language effects on software production. Introduces current trends in programming such as language features of problem-oriented and object-oriented programming, and analysis and design of user-oriented application languages.

CIS 552 three credits
Database Design
Prerequisite: CIS 212 or equivalent

The relational, hierarchical, and network approaches to database systems, including relational algebra and calculus, data dependencies, normal forms, data semantics, query optimization, and concurrency control on distributed database systems.

CIS 554 three credits
Advanced Computer Graphics
Prerequisite: CIS 454 or permission of instructor

Three-dimensional graphics including: color, shading, shadowing and texture, hidden surface algorithms. An extensive project will be assigned, including documentation and presentation.

CIS 560 three credits
Theoretical Computer Science
Prerequisites: CIS 221, 321, or equivalents

Theoretical basis of the development of computer science. The course details particular formalisms used in the design of hardware and software systems. Intrinsic limitations of computation are described. Advanced topics of automata theory and analysis of algorithms are included. The course also covers Turing machines, the halting problem, models of computation, intractable computations, polynomial reductions, P vs. NP, parallel algorithms, various formal descriptions and specifications of programs and computations, and proofs of program correctness and interactive proof systems.

CIS 561 three credits
Artificial Intelligence

Expert system architectures: forward-production, logic programming, deductive retrieval, and semantic network systems. The course also treats natural language systems, illustrative working systems, and AI programming.

CIS 566 three credits
Theory of Linear and Integer Programming and Computer Applications
Prerequisite: CIS 321 or permission of instructor

Basics of the simplex algorithm, tableaux, artificial variables, the two-phase method, the dual problem and its economic interpretation, primal-dual relationships and method. Also studied are applications to transportation problems and network flows, the polynomial methods of Khachiyan and Karmarkar, and integer programming. Computer methods and exercises will be employed throughout.

CIS 570 three credits
Advanced Computer Systems
Prerequisite: CIS 314 or equivalent

In depth treatment of current computer systems, with performance issues at the center of an analytical approach. The course explores operating system software and the interrelation between architecture and system software. Advanced topics of compiling, assembly, linking and loading of high-level language software are included. The course treats mechanisms of IO and the memory hierarchy, various features of traditional machines, advanced features of modern machines such as RISC and multi-processor machines, and file systems and networked and distributed systems such as inter- and intra-nets.

CIS 571 three credits
Compiler Construction
Prerequisite: CIS 471 or perm. of instructor

Different techniques for lexical analysis, syntax analysis, and object code generation. Emphasis on code optimization techniques and compiler-construction tools. The course will include a significant project.

CIS 572 three credits
Real Time Systems
Prerequisite: CIS 313 or perm. of instructor

Design and implementation of real-time systems. Implementation of real-time system in ADA, scheduling, fault tolerance, and distributed real-time systems are also studied.

CIS 573 three credits
Operating Systems
Prerequisite: CIS 313 or perm. of instructor

The methodologies of operating systems design and implementation. Concurrency, synchronization, process communication, switching control, deadlocks, implementation of dynamic structures, design of operating systems modules and interfaces, system security and integrity, and system updating and documentation are also studied.

CIS 574 three credits
Advanced Computer Architectures
Prerequisite: CIS 314 or perm. of instructor

Study of recent advances in computer organization. Parallel processors, pipelined processors, modular and network architectures data-flow machines, fault-tolerant systems, language-directed, object-based,

capability-based, and message-based processor organizations.

CIS 575 three credits
Parallel Algorithms and Parallel Architectures
Prerequisites: CIS 321, 314, or perm. of instructor

Parallel algorithms and their implementations in parallel architectures. In the first part of the course parallel algorithms are analyzed for problems in graph theory, algebra, FFT, and artificial intelligence. The second part presents implementations of these algorithms in various parallel architectures.

CIS 577 three credits
Computer Networks
Prerequisite: CIS 475 or perm. of instructor

Analysis and modeling of centralized and distributed computer networks. Queuing network analysis, principles of network design, software considerations, and design of computer networks are also studied

CIS 578 three credits
Evaluation of Computer Systems Performance
Prerequisite: MTH 331, CIS 314; or perm. of instructor.

Techniques of analysis and simulation for evaluation of computer systems performance. Queuing systems, Poisson processes, scheduling, service distribution, conservation laws, queuing networks, and discrete simulations are also studied.

CIS 580 three credits
Paradigmatic Software Development
Prerequisite: CIS 311 or equivalent

Software development in the context of various paradigms. The strategies and methods of the procedural, object-oriented, and functional paradigms are studied and practiced. The modeling of software processes will be considered from both the process and product views, as will the appropriateness and measures of effectiveness of these processes in the design of software systems. Students will apply these measures to the course exercises, determining and reviewing the impact of these methods on individual design.

CIS 595 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

CIS 596 three credits
Directed Study
Prerequisites: Permission of the instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

CIS 600 three credits
Master's Project
Prerequisites: CIS 560, 570, and 580

Provides an experience in the development of a detailed, significant project in computer science under the close supervision of a faculty member, perhaps as one member of a student team. This project may be a software implementation, a design effort, or a theoretical or practical written analysis. Public presentation of the master's project and evaluation by two faculty other than the project supervisor are required.

CIS 601, 602, 603 three credits each
Special Topics

Offered as needed to present advanced material to graduate students.

CIS 611 three credits
Graduate Seminar
two-semester course

Preparation and presentation of the master's thesis or project.

CIS 690 three credits
Master's Thesis
Prerequisite: Permission of the Graduate Program Committee, based on performance in CIS 600, approval of proposed topic, and support of a faculty advisor and two faculty readers.

Research leading to submission of a formal thesis. This course provides an optional thesis experience, which may be based on the student's Project in a more intense form or be a sequel effort of a different character. In exceptional circumstances, the student may earn up to six thesis credits, if approved by the Graduate Program Committee Graded A-F.

Electrical and Computer Engineering

Two undergraduate majors are offered by the department: Electrical Engineering and Computer Engineering. Both of these programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

The department also offers graduate programs leading to the M.S. and Ph.D. degrees in Electrical Engineering. For details consult the Bulletin of the Graduate School.

Faculty and Fields of Interest

David Brown underwater acoustics, fiber-optic sensors and systems, viscoelasticity

John R. Buck underwater acoustics, signal processing, marine mammal bioacoustics

Paul R. Caron antennas, plasmas, computers, microprocessors, software

Chi-Hau Chen communications systems, pattern recognition, signal processing

Lester W. Cory rehabilitation engineering, programming languages, HF/VHF communications, avionics

Antonio H. Costa mixed time-frequency representations, spectral estimation, signal processing

Thomas J. Curry (provost/academic vice chancellor) signal processing, computer systems, underwater systems

Lee E. Estes electro-optics, underwater systems, remote sensing

Gilbert Fain underwater acoustics, active circuits

Paul J. Fortier databases, networks, real time systems, computer systems

John W. Gray computer networks, distributed systems, digital design

Robert C. Helgeland marine electronics, computer-aided circuit analysis

Dayalan P. Kasilingam electromagnetics, radar, optics, remote sensing

Gerald Lemay digital/audio signal processing

Hong Liu computer networks, compilers, programming languages

Daniel J. Murphy (interim dean of the college) systems analysis, filter theory, performance assessment

Steven C. Nardone (chairperson) systems theory, modern control and estimation theory, signal processing

Karen Payton speech acoustics, speech perception

Nixon A. Pendergrass (associate dean for undergraduate studies) digital signal processing, time-frequency analysis, adaptive filtering, parameter estimation

David Rancour solid state devices, semiconductor materials

Roman Rutman control theory, systems analysis

Dean J. Schmidlin linear systems, signal processing

Philip H. Viall computer networking, assembly languages, rehabilitation engineering

Electrical Engineering Major
BS degree

The Electrical Engineering program is designed to prepare students for careers as practicing engineers in the wide variety of fields concerned with electrical and electronic devices and systems. The program also prepares students for graduate study in electrical engineering.

Electrical Engineering encompasses many specialties such as communication, instrumentation, automation, power use and distribution, microwave devices and systems, and digital and analog techniques. In all of these specialties electrical engineers must be familiar with devices and systems and must be able to perform various functions such as research and development, systems analysis, management, production, testing, quality control, and sales. They may pursue careers in monitoring and control of the environment, space exploration, transportation systems, ocean engineering, energy resources, and computers.

A core of basic science and mathematical courses is interwoven throughout the four years of study, and the student also selects 15 credit hours in the humanities and social sciences. The students begin to identify with their field in the first and second year of study, and in the third year they gain a foundation for further study in all branches of electrical engineering. A coop experience is also available for qualified students. A senior year composed primarily of elective courses allows the students to concentrate their studies in one or more areas of their choice. A faculty advisor from the department is available to aid students with their selections. Six credit hours of free electives can also be used for specialized study.

The Electrical Engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. The student can associate with his or her profession through the student chapter of the Institute of Electrical and Electronics Engineers. Qualified students can join the Zeta Xi Chapter of the Electrical Engineering National Honor Society, Eta Kappa Nu.

Requirements

Semester Credits

		First	Second
First Year			
EGR 107, 108	Intro. Engineering through Applied Sci. I, II	3	2
PHY 111 (or 113)	Physics for Science & Engineering I	4	
PHY 112 (or 114)	Physics for Science & Engineering II		4
MTH 113 (or 111)	Calculus for Applied Sci. and Engineering I	4	
MTH 114 (or 112)	Calculus for Applied Sci. and Engineering II		4
CHM 153	Modern/Applied Chem. for Sci./Engrg. I **OR**	3	
CHM 151, 161	Princ. Modern Chem. I / Applied Chem. I (4)		
CHM 154	Modern/Applied Chem. for Sci./Engrg. II **OR**		3
CHM 152, 162	Princ. Modern Chem. II / Applied Chem.II (4)		
ENL 101*, 102	Critical Writing and Reading I, II	3	3
		17	**16**
Second Year			
CIS 115	Introduction ot Programming with C	3	
MTH 213	Calculus for Applied Sci. and Engineering III	4	
ECE 261	Digital Logic and Design	3.5	
ENL 266	Technical Communications	3	
ECE 201, 202	Circuit Theory I, II	3.5	3.5
MTH 212	Differential Equations		3
PHY 213	Introduction to Modern Physics		3
ECE 263	Designing with Microprocessors		3.5
	General Education Elective		3
		17	**16**
Third Year			
EGR 301	Applied Engineering Math	3	
ECE 311, 312	Digital Electronics/Analog Electronics	3	3
ECE 321, 322	Linear Systems Theory I, II	3	3
ECE 335, 336	Electromagnetic Theory I, II	3	3
ECE 351, 352	Electrical Engineering Lab I, II	1	1
ECE 231	Electrical Materials Science		3
	General Education Electives	3	3
		16	**16**
Fourth Year			
ECE 451	Electrical Engineering Lab III	1	
ECE 471	Communication Theory	3	
ECE 457, 458	Electrical Engineering Design Project I, II	1	3
ECE 232	Thermodynamics	3	
	Technical Electives**	6	6
	General Education Electives	3	3
		17	**12**
	Total Credits:		**128**

* ENL 101 section must be one that meets the Ethics and Social Responsibility general education requirement.

**
Must be taken from approved list; see next page.

Technical Electives in Electrical Engineering

All Electrical Engineering students must choose technical electives from this list. Students must complete at least one Advanced Electrical Engineering Sequence in their electives as listed below.

ECE 361, 362 Computer Architecture I, II
ECE 384 Random Signals and Noise
ECE 400 Engineering Internship
ECE 401, 402 Undergraduate Research and Independent Study
ECE 403 Special Topics in Electrical Engineering
ECE 404, 405 Undergraduate Design Project I, II
ECE 411, 412 Active Circuits I, II
ECE 413 Introduction to VLSI Design
ECE 414 VLSI Design
ECE 431 Antennas and Propagation
ECE 433 Advanced Electromagnetic Theory
ECE 434 Ionospheric Radio Propagation
ECE 435, 436 Microwave Theory I, II
ECE 438 Optical Devices
ECE 441 Energy Conversion Devices
ECE 442 Power Electronics
ECE 443, 444 Power Systems I, II
ECE 463 Software Engineering
ECE 464 Digital System Design
ECE 465 Microprogrammed Design
ECE 468 Network Application Programming
ECE 469 Computer Networks
ECE 472 Advanced Communication Systems
ECE 475 Introduction to Digital Signal Processing
ECE 476 Information Transmission and Coding
ECE 477 Digital Processing of Speech Signals
ECE 481, 482 Control Theory I, II
ECE 484 Optimization Theory
ECE 490 Algorithms
ECE 491 Intro. to Ocean Engineering
ECE 492 Robotics
ECE 493 Principles of Underwater Systems
ECE 494 Advanced Computer Architectures
MNE 482 Robotics
PHY 341, 342 Modern Physics and Quantum Mechanics I, II
PHY 441 Statistical Thermodynamics
PHY 442 Elements of Solid State Physics
MTH 311, 312 Advanced Calculus I, II
MTH 331 Probability
MTH 332 Mathematical Statistics
MTH 353 Applied Linear Algebra
MTH 361, 362 Numerical Analysis I, II
Any 400- or 500-level MTH or CIS course except seminars or individual study

Advanced Electrical Engineering Sequences

ECE 411, 412 Active Circuits I, II
ECE 435, 436 Microwave Theory I, II
ECE 443, 444 Power Systems I, II
ECE 461, 462 Computer Architecture I, II
ECE 475, 477 Introduction to Digital Signal Processing, Digital Processing of Speech Signals
ECE 481, 482 Control Theory I, II
ECE 491, 493 Introduction to Ocean Engineering, Principles of Underwater Systems

Note 1:
ECE graduate courses at the 500 level are available as electives for advanced seniors with written permission of the instructor and the student's advisor.

Note 2:
Some technical electives may not be offered every term.

Computer Engineering Major
BS degree

Computer Engineering encompasses a broad spectrum of changing and challenging activities such as research, design and development in computer systems, hardware and software, as well as electronic components which are used in the computer industry. The Computer Engineering program prepares students with a strong science background and engineering knowledge to meet the changing high-technology needs in the computer area, and for graduate study in computer and electrical engineering.

Specialization opportunities are offered in microprocessors and microcomputer systems, advanced software development, computer communications, digital signal processing, computer graphics, database systems, and the design of information processing systems. Qualified students are offered the opportunity to obtain a co-op educational experience.

The Computer Engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Students may join the IEEE Computer Society, a professional society with its local chapter at the Department.

Minor in Electrical and Computer Engineering

The Minor in Electrical and Computer Engineering is designed to provide a flexible means for students in engineering, science, or other majors to develop a substantial background in particular areas of electrical and computer engineering. It can bring significant career benefits to majors in science or other engineering programs.

Requirements

1.
A total of at least 20 credits of Electrical and Computer Engineering courses must be taken, following a plan of study approved by an advisor in the Department of Electrical and Computer Engineering (students should develop a plan of study with an advisor as early as possible so that any course prerequisites can be satisfied conveniently).

2.
The courses must include ECE 251, 252, and either the ECE 201, 202 sequence or the ECE 211, 212 sequence.

Requirements

		Semester Credits	
		First	**Second**
First Year			
EGR 107, 108	Intro. Engineering through Applied Sci. I, II	3	2
PHY 111 (or 113)	Physics for Science & Engineering I	4	
PHY 112 (or 114)	Physics for Science & Engineering II		4
MTH 113 (or 111)	Calculus for Applied Sci. and Engineering I	4	
MTH 114 (or 112)	Calculus for Applied Sci. and Engineering II		4
CIS 115	Computer Programming with C	3	
CIS 215	Program Design and Data Structures with C		3
ENL 101*, 102	Critical Writing and Reading I, II	3	3
		17	**16**
Second Year			
MTH 213 (or 211)	Calculus for Applied Sci. and Engineering III	4	
ENL 266	Technical Communications	3	
ECE 364	Object-Oriented Programming	3	
ECE 201, 202	Circuit Theory I, II	3.5	3.5
MTH 212	Differential Equations		3
ECE 262	Computer Design		4
ECE 292	Computer Engineering Mathematics		3
	General Education Electives	3	3
		16.5	**16.5**
Third Year			
ECE 311	Digital Electronics	3	
ECE 351	Electrical Engineering Lab	1	
ECE 361	Computer Architecture I	3	
ECE 321	Linear Systems Theory I	3	
MTH 331	Probability	3	
ECE 366	Computer Systems Performance Evaluation		4
ECE 490	Algorithms		3
	Technical Elective**		3
	Restricted Mathematics or Science Elective***		3
	General Education Electives	3	3
		16	**16**
Fourth Year			
CIS 480	Software Engineering	4	
ECE 457	Electrical Engineering Design Project I	1	
ECE 367	Operating Systems	3	
ECE 466	Database Programming	3.5	
	General Education Elective	3	
	Technical Electives**	3	3
ECE 458	Design Project II		3
ECE 494	Advanced Computer Architecture		3
ECE 468	Network Application Programming		3.5
	Free Elective		3
		17.5	**15.5**
	Total credits:		**131**

* ENL 101 section must be one that meets the Ethics and Social Responsibility general education requirement.

** Must be taken from approved list (shown to the right).

*** Must be chosen from among the following: CIS 362, MTH 332, MTH 221, or PHY 213.

Technical Electives in Computer Engineering

All Computer Engineering students must choose technical electives from this list:

ECE 384 Random Signals and Noise
ECE 312 Analog Electronics
ECE 322 Linear Systems II
Any 400- or 500-level ECE course
Any 400- or 500-level CIS course except seminars or individual study
MTH 311, 312 Advanced Calculus I, II
MTH 332 Mathematical Statistics
MTH 353 Applied Linear Algebra
MTH 361, 362 Numerical Analysis I, II
Any 400- or 500-level MTH course except seminars or individual study
PHY 341, 342 Modern Physics and Quantum Mechanics I, II
PHY 441 Statistical Thermodynamics
PHY 442 Elements of Solid State Physics

Note 1:
ECE graduate courses at the 500 level are available as electives for advanced seniors *with written permission of the instructor and the student's advisor.*

Note 2:
Some technical elective courses may not be offered every year.

Electrical and Computer Engineering Courses

Gen Ed note: Electrical and Computer Engineering courses satisfy the Natural Science and Technology requirement.

ECE 191 two credits
Computer Tools for Electrical and Computer Engineers
1 hour lecture, 3 hours laboratory

Computer software that is useful throughout the student's academic and professional career. Topics include operation of the personal computer, Windows95, Microsoft Word, Microsoft Excel, and Matlab. Applications selected are appropriate for electrical and computer engineers.

ECE 201 three and one half credits
Circuit Theory I
3 hours lecture, 1.5 laboratory (3 hours every other week)
Prerequisite: MTH 112

The first course covering basic theory and techniques of circuit analysis. The goals of this course are to introduce the concepts of circuit analysis to students and to train students in engineering, problem-solving skills. Topics include resistive circuits, analysis methods, network theorems, dependent sources (including an introduction to transistors and op amps), energy-storage elements, simple RC and RL circuits, second-order circuit. Students are introduced to simple design concepts.

ECE 202 three and one half credits
Circuit Theory II
3 hours lecture, 1.5 laboratory (3 hours every other week)
Prerequisite: ECE 201

Phasors for analyzing networks in the sinusoidal steady state. Topics include AC steady-state power, three-phase circuits, complex frequency, network functions, frequency response, transformers, Fourier series, Laplace transforms, and Laplace transform applications.

ECE 211 three credits
Elements of Electrical Engineering I
3 hours lecture
Prerequisite: MTH 112

Introduces the non-ECE major to some of the basic concepts in Electrical Engineering. The laws of circuit theory and their applications in the analysis of both DC and AC circuits consisting of passive components (resistors, capacitors, and inductors) are introduced. The concepts of power, impedance, reactance, complex power, phasors, and frequency response are discussed. Semiconductor devices (diodes and transistors) are introduced, analyzed, and applied in basic circuits. Use of available computer software to simulate and evaluate circuit performance is required.

ECE 212 three credits
Elements of Electrical Engineering II
3 hours lecture
Prerequisite: ECE 211

Second course of two-part sequence for non-ECE majors, covering more advanced concepts/applications of Electrical Engineering. Amplifiers utilizing bipolar or field-effect transistors are analyzed and designed. The concepts of feedback systems are introduced in the application of operational amplifiers as summers, integrators, differentiators, filters, and comparators. Basic Boolean algebra and elements of digital logic (gates, adders, flip-flops, counters, and registers) are applied in the analysis and design of practical digital circuits. Use of available computer software to simulate and evaluate the analog and digital circuit designs and homework problems is required. In addition, three-phase power, magnetic circuits, and the characteristics, control, and application of AC and DC machines are studied.

ECE 231 three credits
Electrical Materials Science
3 hours lecture
Prerequisites: PHY 114, CHM 152, ECE 201, and MTH 211; Corequisite: MTH 212

The physics of semiconductor materials and devices. The first part of the course deals with charge carriers in crystalline materials and the concept of transport phenomena. The concepts of energy bands, charge densities and density of states, doping, mobility and resistivity are introduced. The second part of the course builds on these concepts by discussion of the operation and physics of junction diodes, bipolar transistors and field effect transistors.

ECE 251 one credit
Electrical Measurements Lab I
3 hours laboratory
Corequisite: ECE 201

The first of a two-semester lab sequence in the sophomore year. The goal of this course is to introduce students to experimental techniques, laboratory report preparation, use of instrumentation and computer simulation tools, passive circuit analysis, and comparison and evaluation of theoretical versus simulated and actual results. Instruction in laboratory protocol and safety issues is included.

ECE 252 two credits
Electrical Measurements Lab II
3 hours laboratory; 1 hour lecture
Prerequisite: ECE 251; Corequisite: ECE 202

The second semester of the two-semester lab sequence in the sophomore year. Topics include passive circuit investigations, steady-state and transient analysis, electrical instruments, magnetic and logic circuit investigations, and computer modeling experiments. Instruction in laboratory protocol and safety issues will be included.

ECE 261 three and one half credits
Digital Logic and Design
3 hours lecture, 1.5 laboratory (3 hours every other week)

Digital logic fundamentals from a functional point of view. This course introduces the basics of binary arithmetic, logic functions and design with digital devices. Material covered includes quantization, binary numbers and codes, Boolean algebra, digital circuit elements, digital algorithms, state machines and programmable logic devices. The design of combinational and sequential circuits is covered in depth with emphasis on least-cost solutions.

ECE 262 four credits
Computer Design
3 hours lecture, 1 hour laboratory
Prerequisite: ECE 261

Introduction to the hardware structure of computers, including memory structure, register operations, interrupt structure, bus operation, computer instructions, and addressing modes. The complete design of a simple CPU is developed and hands-on laboratory is included.

ECE 263 three and one half credits
Designing with Microprocessors
Prerequisite: ECE 261
3 hours lecture, 1.5 hours laboratory (3 hours every other week)

A study of microprocessor design useful to electrical engineering, including assembly language programming, program debugging, and system design. Students will learn the fundamentals of microprocessor technology and will apply this technology toward the design of systems involving data collection, automatic control and operator interfaces. Emphasis will be placed on hands-on program development using an M68HC11 Development Board.

ECE 292 three credits
Computer Engineering Mathematics
3 hours lecture
Prerequisites: MTH 211, 212, a working knowledge of computer programming
Co-requisite: ECE 212

A study of mathematical methods useful to the computer engineer, including topics from numerical analysis and linear algebra. Apart from addressing many useful concepts and methods in modern numerical analysis, another main objective is assuring that the students learn how and when to apply a particular numerical analysis tool or method and that they can analyze and interpret the results provided by the method. Emphasis is placed on selecting appropriate numerical tools for a variety of basic problems, applying them, and studying their reliability, efficiency, and computer implementation. A large number of problems are solved using the computer.

ECE 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing. Permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged Graded CR/NC For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning)

ECE 311 three credits
Digital Electronics
3 hours lecture
Prerequisite: ECE 202

Course objectives include learning the fundamentals of solid-state electronic devices and the application of these devices to the design of digital circuits. Among the topics covered are the fundamentals of semiconductors, diodes and diode circuits, field-effect transistors, and bipolar junction transistors. Also covered are logic gates, MOS and CMOS logic design, and bipolar logic design using emitter-coupled logic (ECL) and transistor-transistor logic (TTL). Focus is on the design of logic circuits through the solving of design-oriented problems and the design, implementation, and testing of logic circuits by means of computer simulation software.

ECE 312 three credits
Analog Electronics
3 hours lecture
Prerequisite: ECE 311

Course objectives include learning the fundamental concepts of analog electronics and the application of these concepts to the design of analog circuits both discrete and integrated. Among the topics covered are operational amplifiers, small-signal modeling and linear amplification, single-transistor amplifiers, and multistage amplifiers. Also covered are frequency response, feedback, stability, and oscillators. Focus is on the design of analog circuits through the solving of design-oriented problems and the design, implementation, and testing of analog circuits by means of computer simulation software.

ECE 321 three credits
Linear Systems Theory I
Prerequisites: MTH 212, ECE 202

Properties of linear, time-invariant systems and the techniques of analysis and design in both the time and frequency domains. Topics include: time-domain representations of systems, time-domain solution of differential and difference equations, convolution theorem, impulse response, stability and causality, Laplace and Z-transforms, poles and zeros, continuous and discrete-time Fourier series and Fourier transforms, transfer function, frequency response, filtering, AM modulation, time-division multiplexing, and the sampling theorem. Students learn to use analysis tools as part of a process to design functional filtering and modulation systems to meet specifications. They implement their designs in block diagram form in a simulator and test them against specifications. Students are taught to work in teams on problems and projects.

ECE 322 three credits
Linear Systems Theory II
Prerequisite: ECE 321

A continuation of ECE 321. Topics include: discrete-time filters, the Fast Fourier Transform (FFT), discrete-time signal processing in the frequency domain, continuous-time and discrete-time feedback systems, block diagram representation of systems, Bode plots, time-domain and frequency response of second-order systems, feedback stability issues, root-locus, Nyquist stability criterion, gain and phase margins, applications of feedback control systems, continuous-time state variable analysis, linear transformations of state vectors, controllability and observability, discrete-time state equations. Students use the analysis tools developed in this course and in ECE 321 to design systems which meet functional specifications. They also continue to develop experience working in teams on problems and projects.

ECE 335 three credits
Electromagnetic Theory I
3 hours lecture
Prerequisite: PHY 114
Corequisite: EGR 301

Fundamentals of electrostatic, magnetostatic, and time-varying fields leading to Maxwell's equations. Topics include the electromagnetic model, vector analysis in terms of a generalized orthogonal coordinate system, static electric fields, solution of electrostatic problems, steady electric currents, static magnetic fields, time-varying fields and Maxwell's equations. Computer methods in field computations are utilized. Transmission line analysis is introduced.

ECE 336 three credits
Electromagnetic Theory II
3 hours lecture
Prerequisite: ECE 335

Fundamentals of electromagnetic wave theory with applications. Topics include review of time-varying fields and Maxwell's equations, plane electromagnetic waves, theory and applications of transmission lines, waveguides, cavity resonators, antenna and radiating systems. Computer methods are utilized for analysis, design, and visualization.

ECE 351, 352 one credit each
Electrical Engineering Laboratory I, II
3 hours laboratory each
Prerequisites: ECE 202, 252 for ECE 351; ECE 261, 311, 351 for ECE 352
Corequisites: ECE 311 for ECE 351; ECE 312 for ECE 352

Two-semester laboratory series, includes the use of measuring instruments and techniques in the investigation of non-linear device characteristics, and the network response of basic electronic circuits. Emphasis is on semiconductor devices. Instruction in laboratory protocol and safety issues will be included.

ECE 361, 362 three credits each
Computer Architecture I, II
3 hours lecture for each 3 credits
Prerequisite: ECE 262

The architecture of x86 based computers. The instruction set, I/O handling, interrupt handling and bus structures are discussed. A major project involving the hardware design of an interface board and the software design of a device driver for the DOS operating system is required in the first semester. Topics in C/Assembly development, numeric processing, extended memory use, file management and memory management are discussed. The course evolves to using the C++ language and to the architecture of the Windows operating system. The protected mode architecture of the x86 family is presented. Program development for windows is introduced and the second semester project requires students to access a DOS device driver from windows utilizing the DOS protected mode interface.

ECE 364 three credits
Object-Oriented Software Development
Prerequisite: CIS 215 or perm. of instructor

Basic object-oriented concepts introduced within a networked environment. Language concepts including objects, classes, and polymorphism from the viewpoint of object-oriented design. Implementation including portability, networking, and concurrency will be discussed. Design tools and prototyping will be used.

ECE 365 four credits
Microprogrammed Design
3 hours lecture
Prerequisites: ECE 262 or equivalent, CIS 115

The course goals are to provide students with a foundation in microprocessor and microcontroller design and operations using state machine and microprogramming techniques. Students will learn how to describe, design and test architectures from assembly language perspectives, learn how to develop microprogrammed implementations of an assembly level instruction set for a variety of platforms, through homework, cooperative in class exercises and practical team laboratory design exercises. The above goals will be met through students mastery of the following topics: state machines and logic based timing, assembly language design and specification, addressing modes and instruction architecture, simple processor configuration and microprogrammed design, complex processor and microprogrammed design, and RISC processor and microprogrammed design, as demonstrated by exams, homework, and team practical exercises.

ECE 366 four credits
Operating Systems Performance Evaluation
3 hours lecture, 3 hours lab
Prerequisites: MTH 331, ECE 262, 364

A review of probability and statistics with applications to principles of queuing theory, computer systems simulation, and empirical analysis techniques as applied to computer systems modeling. This course is oriented towards a practical application of theory and concepts to computer systems hardware and software performance modeling and assessment.

ECE 367 three credits
Operating Systems
3 hours lecture, 1.5 hours lab
Prerequisites: CIS 215, ECE 262

Multiprogramming and timesharing. Topics covered include concurrent and operating processes; criticial sections; scheduling policies, memory management, and file management.

ECE 384 three credits
Random Signals and Noise
3 hours lecture
Prerequisite: ECE 321

The course goals are the mastery of the basic concepts of probability and statistics as they apply to random signals and their effect on system analysis and design. Topics covered include basic probability, random variables, probability density and distribution functions, joint distributions, conditional distributions, functions of a random variable, mean, variance, covariance, characteristic functions, random processes, correlation functions, power spectral density, linear systems. linear filters, systems that maximize signal-to-noise ratio, and selected applications and designs from communication theory, sonar and radar, and control theory.

ECE 400 three credits
Engineering Internship
Prerequisites: Senior standing; submission of a detailed project proposal to be approved by the EE Curriculum Committee

An electrical or computer engineering project performed under the joint supervision of an industrial or governmental sponsor and a faculty advisor. ECE 400 is an approved 3-credit technical elective. ECE 400 may not be substituted for ECE 457/458, senior design project.

ECE 401, 402 three credits each
Undergraduate Research I, II
Prerequisite: Senior standing

Investigations of a fundamental and/or applied nature intended to develop research techniques, initiative, and self-reliance. Also, studies are conducted in areas not included in the formal course offerings. Admission to the course is based on a formal proposal endorsed by an advising professor. On the recommendation of the advising professor, the course may be extended for another three credits.

ECE 403 three credits
Special Topics in Electrical Engineering

Topics of interest to electrical engineering. Course content may vary from year to year.

ECE 404, 405 three credits each
Undergraduate Design Project I, II
Prerequisite: Senior standing

A design project developed under the supervision of an advising professor. Admission to the course is based on a formal proposal endorsed by the advising professor. On the recommendation of the advising professor, the course may be extended for another three credits.

ECE 411, 412 three credits each
Active Circuits I, II
3 hours lecture
Prerequisites: ECE 312 or equivalent for ECE 411; ECE 411 for ECE 412

A design course in the manipulation and generation of signals using analog integrated circuits, especially operational amplifiers. Methods are developed to understand and control the impact of practical component limitations like input and output impedance, frequency response, offset voltages, bias currents and cost. Stability considerations and compensation techniques are studied and students are introduced to noise considerations in circuit design. Students design and test many of the circuits discussed, such as precision voltage and current sources, V/I and I/V converters, active filters, nonlinear amplifiers, signal generators, sample-and-hold circuits, D/A and A/Dís, and phase-locked loops. Students work individually on the small designs but in teams on larger ones.

ECE 413 three credits
Introduction to VLSI Design
3 hours lecture
Prerequisites: ECE 261 or equivalent; senior status

Introduction to design of Very Large Scale Integrated Circuits (VLSI), taught at the gate level. Significant emphasis will be placed on circuit timing, simulation and layout techniques through the use of computer-aided design tools available in the Computer Aided Engineering Laboratory. A final project, consisting of a student's design, can be submitted for fabrication.

ECE 414 three credits
VLSI Design
3 hours lecture
Prerequisite: ECE 413

Continuation and expansion of concepts developed in ECE 413 from an analog circuit perspective. The emphasis is on CMOS with occasional references to NMOS to make comparisons. Each student is required to complete the design of a reasonably complex IC and make a class presentation of its design methodology, expected behavior, and correlation with simulation results. Therefore discussion of testing and design for testability will also be part of this course.

ECE 431 three credits
Antennas and Propagation
3 hours lecture
Prerequisite: ECE 336

Radiating systems including linear antennas, multi-element antennas, phased array antennas, aperture antennas, and broadband antennas. The radiation pattern , near field pattern and input and mutual impedance of antennas is studied. Also discussed are groundwave propagation and ionospheric pronagation.

ECE 433 three credits
Advanced Electromagnetic Theory
3 hours lecture
Prerequisite: ECE 336 or perm. of instructor

Vector analysis in a generalized orthogonal coordinate system. Two- and three-dimensional boundary-value problems, waveguides with cylindrical conducting boundaries, special waveguide types, resonant cavities, and radiation are studied.

ECE 435 three credits
Microwave Theory I
3 hours lecture
Prerequisite: ECE 336 or equivalent

Review of transmission-line theory. The characteristics of TEM lines and waveguides are studied in detail. Impedance matching networks are designed and evaluated, including the multisection quarter-wave transformer. The analysis and design of various one- and two-port components are discussed. Both coaxial and waveguide versions are described.

ECE 436 three credits
Microwave Theory II
3 hours lecture
Prerequisite: ECE 435

The use of transmission-line theory and electromagnetic theory in the design of filters, hybrids, and couplers is covered. The scattering matrix is utilized as an analytical tool. Computer methods for analyzing microwave circuits are also employed. The theory of ferrimagnetic resonance is used to explain the operation of ferrite isolators and circulators. Semiconductor control circuits containing varactor and PIN diodes are analyzed in detail.

ECE 438 three credits
Optical Devices
3 hours lecture
Prerequisite: Senior or perm. of instructor

Modern optical devices, introduced and incorporated in the design of electro-optic systems. optical fibers, lenses, prisms, gratings, polarizers, interferometers, filters, beam splitters, light sources including lasers, light modulators, light detectors, and array sensors are incorporated into the design of optical systems intended for communications, illumination, metrology, display and observation. Design experience is achieved through assignments that are progressively larger system design problems which generally incorporate earlier designs.

ECE 441 three credits
Electromechanical Energy Conversion
3 hours lecture
Prerequisite: ECE 202

Introduction to magnetic circuits and their application in transformers and in AC and DC rotating machines. Among the AC devices which will be studied are three-phase transformers and induction motors, synchronous motors, split-phase motors, autotransformers, and motor-starters. Alternators and DC motors (series, shunt, and compound) are included. Applications of the devices, which are studied, are emphasized.

ECE 442 three credits
Power Electronics
3 hours lecture
Prerequisite: Senior ECE standing

Introduction to electronic circuit design techniques when using power semiconductor devices (power transistors and fixed or controlled rectifiers) for industrial applications. Typical applications include switching DC power supplies, power conditioners, choppers, DC-to-AC inverters, DC-to-DC converters, cycloconverters, and motor controllers.

ECE 443 three credits
Power Systems I
3 hours lecture
Prerequisites: ECE 202, 321 or equivalent

First course in two-semester sequence which covers power system generation and distribution. It begins with a general review of power system components (generators, transformers, transmission lines, and loads) and then develops proper system modeling techniques. Load-flow studies and the methods of analysis are introduced. Computer methods are stressed and encouraged whenever possible.

ECE 444 three credits
Power Systems II
3 hours lecture
Prerequisite: ECE 443

Second course of a two-semester sequence, introduces the student to additional concepts of power system analysis and distribution. Three-phase faults, symmetrical components, and unsymmetrical faults are studied. System protection and system stability problems are also discussed. Computer methods of solution are stressed whenever possible.

ECE 451 one credit
Electrical Engineering Laboratory III
3 hours laboratory
Prerequisites: ECE 312, 335, 352, 262
Co-requisite: ECE 471

Focused on solutions of open-ended problems requiring material from several different courses, development of engineering judgment and the development of modeling and testing skills. Laboratory experiments are selected from electronics, microwaves, and communications and control systems. Instruction in laboratory protocol and safety issues are included.

ECE 453 one credit
Computer Engineering Laboratory I
3 hours laboratory
Prerequisite: ECE 462; Co-requisites: ECE 367, 369

Laboratory work in this course is associated with operating systems and software engineering. Instruction in laboratory protocol and safety issues will be included.

ECE 454 one credit
Computer Engineering Laboratory II
3 hours laboratory
Prerequisite: ECE 453; Corequisite: ECE 466, 468

Laboratory work in this course is associated with network programming and database programming. Instruction in laboratory protocol and safety issues will be included.

ECE 457 one credit
Design Project I
1 hour lecture
Prerequisites: ENL 266, senior standing

The goal of this course is to prepare the student to undertake and successfully complete the capstone design experience embodied in the subsequent course ECE 458 Design Project II. The objectives of this course include: providing a firm basis in the methodology of planning and executing an engineering design project, exposing the student to real case studies involving engineering design, forming a design project group and developing group skills in executing design projects, preparing a design project plan, and having the student groups select a design project of appropriate complexity and their faculty advisor in preparation for the subsequent course ECE 458. Included in this course are two major written reports and two major oral presentations as well as minor reports and presentations.

ECE 458 three credits
Design Project II
1 hour lecture; 6 hours laboratory
Prerequisites: ECE 451, 457

The follow-on course to ECE 457 Design Project I. Goals of this course are for the student to conduct, successfully complete, and professionally present the results of his/her capstone design project under the oversight of his/her faculty advisor. The objectives of this course include: executing the design project plan prepared in ECE 457, conducting group activities associated with the execution of the design project, participating in design reviews, preparing the project report, and presenting and demonstrating the results of the project activities to a group of faculty, students, and industry representatives. Included in this course are three major written reports and three major oral presentations as well as minor reports and presentations.

ECE 463 three and one half credits
Software Engineering
3 hours lecture, 1.5 hours laboratory
Prerequisites: CIS 215, ENL 266

The software development process: user requirements, specifications, design, coding, testing, maintenance, documentation and management. This course is design to enable participants to acquire the ability to (1) apply software engineering principles and practices to the planning and development of an actual software product, (2) work as a member of a software project team, (3) produce professional software engineering documents, and (4) deliver oral presentations associated with software development.

ECE 464 three credits
Digital Design
3 hours lecture
Prerequisite: ECE 262 or perm. of instructor

State machines design and synthesis of application specific applications using modern digital technologies (e.g. programmable logic).

ECE 466 three and one half credits
Database Programming
3 hours lecture, 1.5 hours laboratory
Prerequisites: CIS 115

The course goals are to provide students with a broad view and understanding of the fundamentals of database management systems and operations, to learn how to describe and specify a database, embedded and ad-hoc database applications and to develop least cost solutions to information management problems integrated through a series of database design exercises implemented within an industry grade database management system. Topics include database information models, database design models and tools, database construction, database management systems architecture and operations, database applications specification, database stored procedure design, database embedded programming design, and database ad-hoc query specification and design.

ECE 467 three and one half credits
Advanced database Design
3 hour lecture
Prerequisite: ECE 466

The course goals are to provide students with a broad view and understanding of the fundamentals of database management systems and operations, to learn how to describe and design a database, to learn how to describe and specify embedded and ad-hoc database applications and to learn how to develop least cost solutions to information management problems integrated through a series of database design exercises implemented within an industry grad database management system. Topics include database management systems architecture and operations, database applications specification, database stored procedure design, database embedded program design, and database ad-hoc specification and design.

ECE 468 three and one half credits
Network Application Programming
3 hours lecture, 1.5 hours laboratory
Prerequisite: ECE 367 or perm. of instructor

The methodologies of network programming and the implementation of network applications. Client-Server model, threads, and synchronization in a distributed computing environment. Inter-process communication, communication protocols (e.g. UDP, TC/IP, and X), remote procedure calls (RPC), transport layer interface (TLI), session layer programming (XTI), distributed file systems and distributed computing environments.

ECE 469 three credits
Computer Networks
Prerequisite: ECE 367 or perm. of instructor

Introduction to current networking methodologies. Backbone design, layered architecture, protocols, local and wide area networks, internetworking, broadband, electrical interface, and data transmission. Simulation projects will be included.

ECE 471 three credits
Communication Theory
3 hours lecture
Prerequisite: ECE 321

Channel capacity is introduced. Fourier series and transforms, signals and linear networks are reviewed. Digital communications including sampling theory, analog-to-digital conversion processes, pulse code modulation, digital pulse shaping, and time/frequency division multiplexing are covered. Broadcast, double, single and vestigial amplitude modulation and phase and frequency modulation are examined. Networks are introduced. Several applications are considered.

ECE 472 three credits
Advanced Communications Systems
3 hours lecture
Prerequisite: ECE 471

A continuation of ECE 471. Probability theory, central-limit theorem, and random processes are introduced. Amplitude and angle modulation systems as well as pulse code modulation systems are examined in the presence of noise. Optimum binary detection in the presence of noise is determined. Channel capacity is derived. Block and convolutional error-correcting codes are introduced.

ECE 475 three credits
Introduction to Digital Signal Processing
3 hours lecture
Prerequisite: ECE 321

Review of discrete-time linear systems and Z-transforms. Quantization, sampling process, recursive and nonrecursive digital filter designs and implementations, fast algorithms for discrete Fourier transforms, high-speed convolution and correlation, and applications to digital processing of real data.

ECE 476 three credits
Information Transmission and Coding
3 hours lecture
Prerequisite: ECE 471

Self-information and entropy, sources of information, the structure of language, noiseless coding and the noiseless discrete channel, some properties of codes, the construction of codes, mutual information, channel capacity and Shannon's theorems, error-correcting codes and decoding algorithms, applications to communication nets.

ECE 477 three credits
Digital Processing of Speech Signals
3 hours lecture
Prerequisite: ECE 475

Applications of digital signal processing to speech signals. Course goals are to reinforce concepts learned in ECE 475, to introduce new tools needed to deal with time-varying signals and to have students apply what they've learned to their own voices. A semester design project is a large component of this course. Topics include review of digital signal processing fundamentals, brief introduction to probability theory, articulatory and acoustic phonetics, time-domain methods for speech processing, short-time Fourier analysis, homomorphic speech processing, linear predictive coding of speech, and applications.

ECE 481, 482 three credits each
Control Theory I, II
3 hours lecture each
Prerequisites: ECE 321, 322

Two-semester course sequence, a continuation of the systems sequence. Control Theory I covers classical control of single-input single-output systems. Both time domain and frequency domain analysis and design techniques are presented. Subjects included are signal flowgraphs, control devices, electrical motors, etc., root-locus, Bodé plots, Routh-Horwitz criterion, Nyquist stability, phase lead/lag controllers and PID controllers. Control Theory II introduces control of discrete systems, modern control theory and non-linear control. Concepts of discrete systems, state variables, observability, controllability, phase plane, and describing functions method are surveyed.

ECE 484 three credits
Optimization Theory
3 hours lecture
Prerequisite: Calculus and some linear algebra

Introduction to mathematical programming techniques and their application to engineering problems as well as to other fields. Unconstrained optimization techniques are stressed. Additional topics including linear and quadratic programming are discussed. Computer solutions are emphasized.

ECE 490 three credits
Algorithms
3 hours lecture
Prerequisites: MTH 112, CIS 211, ECE 262, 292

Computer algorithm design concepts, computational complexity, NP-completeness, and the design and analysis for efficient algorithms. Topics include data structures, sorting, graph, shortest path, depth first search, breadth first search, and network flow algorithms, computational geometry, dynamic programming, linear programming, and parallel and distributed algorithms.

ECE 491 three credits
Introduction to Ocean Engineering
2 hours lecture, 3 hours laboratory
Lab includes boat trips and LMSET Acousto/Optic Tank Experiments
Prerequisite: Senior standing

Study of a range of ocean engineering topics to provide a basis for the design of systems, which must function in the ocean environment.

ECE 493 three credits
Principles of Underwater Systems
3 hours lecture
Prerequisite: Senior standing in College of Engineering

Engineering students are exposed to the principles that govern the design and operation of underwater systems. The student should develop a broad understanding of underwater systems that will prepare him/her for more advanced studies and/or engineering projects in underwater systems. Topics include generation of sonar signals, sound propagation in the ocean. The course will include laboratory experiments aboard the UMass Dartmouth research vessel, Lucky Lady and experiments in the acousto/optic tank at the UMass Dartmouth Laboratory for Marine Science, Environment, and Technology.

ECE 494 three credits
Advanced Computer Architecture
3 hours lecture
Prerequisites: ECE 262, 462

Advanced computer design and performance evaluation concepts, pipelining, RISC, superscalar, superpipelined, vector processing, I/O, SIMD, and MIMD computational models.

ECE 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

ECE 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Graduate Courses in Electrical and Computer Engineering

Note: Some graduate courses may be open to undergraduates. Please consult your department chairperson. See the *Graduate Catalogue* for graduate general and program requirements.

ECE 501, 502 three credits each
Masters Graduate Research
Prerequisite: Submission of a formal proposal endorsed by an advising professor

Investigations of a fundamental and/or applied nature, intended to develop design techniques, research techniques, initiative, and self-reliance. Admission is based on a formal proposal endorsed by an advisor and submitted to the Graduate Director.

ECE 505 three credits
Numerical Methods
3 hours lecture
Prerequisite: Permission of instructor

Computer-aided techniques, MATLAB and the use of numerical approaches in the solution of problems for which analytical methods are impractical or impossible. Pitfalls and errors in computer methods will be reviewed. MATLAB is used on personal computers. Course topics include root-finding methods, iteration methods, matrix operations and evaluations, interpolation methods, solutions of ordinary differential equations. An emphasis is given to the least square techniques of numerical linear algebra.

ECE 511 three credits
Application of Active Circuits
3 hours lecture
Prerequisite: Permission of instructor

Advanced analog design techniques with emphasis on use of operational amplifiers. Topics include multi pole transfer functions and stability, noise calculations, and specialized applications. Problems will be solved with analog circuit simulation packages.

ECE 515 three credits
Modern Optics
3 hours lecture
Prerequisite: Permission of instructor

Fermat's Principle, geometrical optics, diffraction theory, Huygens Principle, coherence, Fourier optics, modulation transfer function, side looking radar, holography and lens aberrations.

ECE 517 three credits
Optical Fiber Communications
3 hours lecture
Prerequisites: Fourier analysis and Electromagnetics

Optical fibers and devices. Topics include structures and wave-guiding, optical fiber signal degradation, optical sources, power launching and coupling, photodetectors, optical receiver operation, transmission link analysis, measurements, optical fiber fabrication and cabling, and introduction to sensors.

ECE 521 three credits
Random Signal Analysis I
3 hours lecture
Prerequisite: ECE 471 or equiv.

Random variables and probability distributions, statistical averages including correlation functions, sampling theory, spectral analysis, the Gaussian process, shot noise, and the detection of signals in noise. The course will include several laboratory demonstrations of signal processing techniques.

ECE 522 three credits
Random Signal Analysis II
3 hours lecture
Prerequisite: ECE 521 or equiv.

A continuation of ECE 521. Measurement of correlation functions and probability densities, statistical detection of signals, optimum filtering and prediction, and statistical description of non-linear devices.

ECE 523 three credits
Digital Spectral Analysis
3 hours lecture
Prerequisites: ECE 521 or equiv., ECE 574 or equiv., and graduate standing

Spectral estimation techniques with particular emphasis on their implementation in a computer. The course should enable participants to understand spectral estimation and acquire a working knowledge of the spectral analysis techniques available, with a critical understanding of the advantages and limitations of all of spectral estimation techniques studied. The student will learn: (1)limitations of Fourier transform based spectral estimators; (2)benefits and limitations of high resolution methods; (3) how to choose accurate and appropriate models; (4) the "state-of-the-art" in modern spectral estimation; (5) how the modern spectral estimators perform in practice; (6) when to select each spectral estimation method.

ECE 524 three credits
Solid State Electronics
3 hours lecture
Prerequisite: Graduate standing or permission of instructor

Solid state device behavior. Among the topics covered are semiconductor fundamentals, p-n junction theory, and both the bipolar and the field effect transistor. Emphasis is placed on those transistor parameters that need to be considered in VLSI and microwave applications.

ECE 525 three credits
Digital Filters
3 hours lecture
Prerequisites: ECE 574 or ECE 475, and ECE 521 or ECE 384 or equiv.

Design, simulation, and implementation of digital filters. After a review of classical FIR and IIR design techniques and modern AR, MA, and ARMA techniques, the course immerses the student in problem solving with digitized signals and DSP microprocessors. These problems include noise reduction, echo cancellation, signal detection, etc. Computer simulation is an integral part of this course, and students are expected to have some familiarity with small computer operating systems and assembly language programming concepts.

ECE 527 three credits
Active Remote Sensing of the Environment
2 1/4 hours lecture, 3/4 hours laboratory
Prerequisites: ECE 335, 336, and 384

Principles and applications of active remote sensing techniques. Course will focus on microwave and millimeter wave radar techniques. Some topics in the use of lidar and sonar will also be covered. Topics include synthetic aperture radar, scatterometers, altimeters, polarimetric radars and fluorescence lidars. Applications include ecosystem monitoring, soil moisture measurements, oceanography and precipitation studies.

ECE 528 three credits
Passive Remote Sensing of the Environment
2 1/4 hours lecture, 3/4 hours laboratory
Prerequisites: ECE 335, 336, and 384

Principles and applications of passive remote sensing techniques. Course will include the use of sensors such as thematic mappers multispectral scanners, advanced high resolution radiometers and multispectral microwave radiometers. Applications include ocean color measurements, biomass measurement, marine pollution monitoring and atmospheric measurements.

ECE 533 three credits
CMOS VLSI Design
3 hours lecture
Prerequisite: ECE 413 or equiv.

Expansion of the concepts and design techniques developed in ECE 413, but with emphasis on hardware descriptive languages. Each student will be required to complete and present at least one project. Some designs may be fabricated.

ECE 534 three credits
Microwave Magnetics and Electronics
3 hours lecture
Prerequisite: ECE 436 or equiv.

A variety of solid-state and magnetic components encountered in microwave circuitry. Passive structures used as part of active device networks, and the design of semiconductor switches and phase shifters as well as transistor amplifiers, will be covered.

ECE 535 three credits
Analog VLSI Design
3 hours lecture
Prerequisite: Graduate standing or permission of instructor

Introduction to the design of analog circuitry using bipolar and CMOS VLSI design techniques. Analog circuits such as operational amplifiers, active filters, phase lock loops and circuits used in neural modeling will be studied. Students will undertake an extensive project.

ECE 541 three credits
Database Systems I
3 hours lecture
Prerequisites: Graduate standing and at least C grade in Programming

Introduction to database systems from an architectural and functional perspective. The course provides an overview of database systems, application domains, data models, support services, database query processing, database system architecture, open systems concepts, database standards and future trends. Materials covered include computer representation of information, computer data storage, properties of persistent data, database structuring models (relational, network, object, object-relational and entity-relationship), transaction processing models, concurrency control techniques, database and transaction recovery, and security. These concepts will then be explored by examining and comparing the architecture and operations of database systems such as conventional, real-time, temporal, fault tolerant, distributed, heterogeneous, secure and others.

ECE 550 three credits
Fundamentals of Physical Oceanography
Prerequisites: PHY 114, MTH 212

The fundamental physical processes of large scale ocean circulation. Topics include heat budgets, observed and derived physical properties of seawater, the Coriolis force, geostrophic circulation, wind-driven circulation, vorticity and western intensification, thermohaline circulation, tides, waves, and coastal oceanography.

ECE 552 three credits
Fundamentals of Ocean Engineering
3 hours lecture
Prerequisite: Senior standing in an engineering major or permission of the instructor

Study of selected areas of engineering to provide a basis for intelligent engineering design in the ocean. Topics include ocean forces, basic ship theory, undersea life-support, marine navigation systems and corrosion.

ECE 553 three credits
Ocean Engineering Laboratory
3 hours lecture
Co-requisite: ECE 552

Measurements of ocean properties and processes. Topics include navigation, underwater sound, underwater light, and oceanographic, biological and water quality parameters. Experiments performed from the UMass Dartmouth research vessel and in laboratory. Each student will design and execute an at-sea experiment.

ECE 557 three credits
Fundamentals of Acoustics
3 hours lecture supplemented by classroom demonstrations
Prerequisite: Calculus based physics required, prior exposure to Fourier Series

Fundamentals of acoustics including fundamentals of vibration and wave propagation in solids and fluid media. Topics include vibration and wave propagation in one-dimension, two-dimension, and 3-dimensional media including strings, bars, membranes, plates and fluids; mechanical and electrical equivalent circuits models, separation of variables and normal modes; the development of the homogeneous and inhomogeneous linearized wave equation and solutions to linear wave equations; propagation of plane waves and spherical waves in ideal gasses and single phase fluids; basic hydrodynamic relations, derivation of speed of sound for arbitrary fluids, complex sound speed and wave numbers; acoustic impedance, acoustic velocity, acoustic displacement and energy relations; reflection, transmission, refraction and attenuation phenomena in fluids.

ECE 561 three credits
Computer Systems I
3 hours lecture
Prerequisites: ECE 363, CIS 111, or CIS 261

Develops a broad working knowledge of computer systems hardware and software including interrupt handling, assembly language, high order language interfaces and communications to the operating system. In addition, various themes in the development of computer architectures will be examined including hardware and software developments such as virtual memories, stacks, general purpose operating systems and hardware-software tradeoffs.

ECE 562 three credits
Computer Systems II
3 hours lecture
Prerequisite: ECE 561 or perm. of the instructor

The methodologies of distributed systems design and implementation. Networking, interprocess communication, distributed operating systems, distributed fileservice, name services, concurrency control, distributed transactions, system security and integrity, system updating and fault recovery.

ECE 565 three credits
Computer Operating Systems
3 hours lecture
Prerequisite: ECE 561 or perm. of instructor

The methodologies of operating systems design and implementation Principles will be discussed in the context of two major case studies (the UNIX and Windows NT kernels) in a distributed environment. Topics include the kernel architecture, file systems, process structure, threads, control, inter-process communications and memory management.

ECE 566 three credits
Microprocessors I
3 hours lecture
Prerequisites: CIS 262 and ECE 363

Representative microprocessor systems currently available, introduced and compared. The course begins with a general discussion of hardware, software, programming, and interfacing, followed by consideration of various technologies and hardware/software tradeoffs, concluding with specific design examples.

ECE 567 three credits
Microprocessors II
3 hours lecture
Prerequisite: ECE 566

Continuation of ECE 566. Emphasis is on 16 bit processors. Students use cross assemblers and cross compilers to generate software for 6809, 8086/8088/8087 and 68000 processors. Projects involve A/D converter, DMA operations, etc., on an IBM-PC.

ECE 571 three credits
Digital Communications
3 hours lecture
Prerequisites: ECE 471 and background in random signals and noise

Review of probability theory and random processes; linear systems with random inputs; matched filter and optimum linear filtering and prediction; modulation theory and systems.

ECE 574 three credits
Digital Signal Processing
3 hours lecture
Prerequisite: ECE 321 or equiv.

Representation, analysis and design of discrete signals and systems. The main objective is to give participants the knowledge to analyze and design digital signal processing systems. Topics include a review of the z-transform and the discrete Fourier transform, the fast Fourier transform, digital filter structures, digital filter design techniques, analog-to-digital and digital-to-analog data conversion, quantization issues and effects of finite word-length arithmetic, sampling and aliasing issues, and sampling rate changes.

ECE 575 three credits
Sonar Signal Processing
3 hours lecture
Prerequisite: ECE 597 or ECE 521 or equiv.

Classical theories in detecting and processing both active and passive signals in noise with special emphasis on the underwater environment and associated techniques in sound navigation ranging (SONAR). Both spatial and temporal processing methods are studied including beamforming, matched filtering, effects of noise and interference, application and utility of frequency agile signals, narrowband and broadband passive techniques, and adaptive algorithms to address the time/space varying interference sources. Applications in underwater detection, classification, localization and communication are also discussed.

ECE 576 three credits
Computer Communications
3 hours lecture
Prerequisites: ECE 471 and background in random signals and noise

Mathematical theory for computer network analysis and design; coding for error control; system elements including terminals, modems, multiplexers and concentrators, and communication processors; digital transmission media; teleprocessing networks and computer network; system modeling and analysis; the reliability and security problems in computer communications.

ECE 577 three credits
Artificial Intelligence
3 hours lecture
Prerequisite: Permission of instructor

State-space representations and search methods; problem-reduction representation and search methods; theorem proving in the predicate calculus; games; computer vision, robotics; natural languages, expert system design using Lisp and Prolog.

ECE 580 three credits
Time Series Analysis
3 hours lecture
Prerequisites: ECE 471 and background in random signals and noise

Moving average and autoregressive models, estimation of the mean and autocorrelation, statistical forecasting, spectral analysis and estimation, bivariate processes linear system identification and nonstationary time series. Application to electrical engineering problems is emphasized.

ECE 581 three credits
Mathematics of Systems Analysis
3 hours lecture
Prerequisite: Graduate standing

Elementary exposition of linear algebra and time domain methods and their utility in the analysis and design of linear systems. Linear space, state variables, controllability, observability, assignability, linear state variable feedback design, time variant systems and adjoint model are included.

ECE 582 three credits
Optimal Control Theory
Prerequisite: ECE 581

The calculus of variation and classical optimal control techniques based on it. Modern control theory is presented including Pontryagin's principle of maximum and Bellman's dynamic programming. Relation to Hamiltonian mechanics is discussed.

ECE 583 three credits
Nonlinear Systems Theory
3 hours lecture
Prerequisite: ECE 581 or equiv.

Analysis and design techniques for nonlinear systems. Topics covered include singular points, contraction mapping, existence and uniqueness of solutions, comparison principle, Lyapunov stability, stability of perturbed systems, slowly varying systems, input-output stability, circle criterion, Popov criterion, small-gain theorem, describing function method, feedback control design via linearization, exact feedback linearization, and other selected topics from nonlinear control theory.

ECE 584 three credits
Introductory Estimation Theory
3 hours lecture
Prerequisites: ECE 521 and ECE 581 or equiv.

Basic concepts and principles of estimation theory. Topics include the following estimators: least squares, recursive least squares, best linear unbiased, Bayes estimation, maximum likelihood, maximum a posterior, conditional mean, Gauss-Markov random process Kalman filtering, prediction, smoothing, and nonlinear estimation. Estimator bounds and properties are discussed.

ECE 586 three credits
Inverse Problems
3 hours lecture
Prerequisite: Permission of instructor

Finding the cause function given an effect function, defined as Inverse Problems in the setting of integral transforms such as Radon's and Abel's transforms. Applications cover some problems of data processing, systems control, and communications. Regularization of ill-posed and ill-behaved problems is treated leading to numerically stable

algorithms. Particular attention is paid to inversion of fractional integration and its applications to geophysical explorations, underwater acoustics, medical tomography, population dynamics, stereology, etc.

ECE 587 three credits
Fuzzy Sets and Applications
3 hours lecture
Prerequisite: Probability theory

Concepts of fuzzy sets, understanding its impact on mathematics, and development of the principles of design. Crisp sets, their operations, and classical two value logic are reviewed and extended to fuzzy sets and fuzzy logic. Relations, orderings compatibility maps, and morphisms are extended to their fuzzy counterparts. Fuzzy numbers, fuzzy arithmetic and equations are presented. Approximate reasoning, evidence theory, possibility theory and probability are covered. Measures of uncertainty, vagueness, and information are developed. Application to fuzzy control is presented while applications to other disciplines are studied via individualized student projects.

ECE 588 three credits
Stability Theory
3 hours lecture
Prerequisites: ECE 382 and ECE 581 or equiv.

Various types of stability are discussed, with an emphasis on the direct method of Lyapunov. The techniques are applicable to nonlinear and linear time-variant systems and include Popov's criterion, circle criterion and treatment of adaptive systems.

ECE 590 three credits
Topics in Electrical Engineering
3 hours lecture
Prerequisite: Permission of instructor

Topics of timely interest in Electrical Engineering. Content changes from year to year.

ECE 591 three credits
Topics in Electrical Engineering
3 hours lecture
Prerequisite: Permission of instructor

Topics of timely interest in Electrical Engineering. Content will change from year to year.

ECE 592 three credits
Principles of Project Engineering
3 hours lecture
Prerequisite: Permission of instructor

The life-cycle phases of research, development and engineering projects, with emphasis on the methodologies that lead to successful execution of such projects. Included is an introduction to the financial and economic aspects of successful project engineering. Principles of software engineering are highlighted to prepare students for the development of embedded computer systems. In parallel with the formal study of these projects and their execution, an authentic work environment is created with project teams and the assignment of real engineering tasks of contemporary importance. Student teams conduct these projects under the supervision of the instructor, and evaluation of the student's program and performance is conducted in a simulated real environment. Includes seminars by industry engineers.

ECE 593 three credits
Quantum Electronics
3 hours lecture
Prerequisites: ECE 336 and PHY 341 or equiv.

General principles of laser systems including media, transmission and resonators. Specific laser types including solid state, gaseous and semiconductor. Modulation, noise and detection of optical radiation. Nonlinear applications such as second harmonic generation and parametric interactions.

ECE 594 three credits
Advanced Digital Signal Processing
3 hours lecture
Prerequisites: ECE 521 and 574 or equiv.

The fundamental concepts of several important advanced topics in digital signal processing including: homomorphic signal processing, adaptive signal processing, short-time Fourier transforms, and two-dimensional signal processing. Applications are discussed in radar, sonar, speech and image processing.

ECE 595 three credits
Independent Study
Prerequisite: Admission to the course is based on a formal proposal which shall include grading procedures. It must be endorsed by the instructor, the student's advisor, the director of the ECE graduate program, and the department chairperson before the course begins.

Allows study into areas not included in the formal course listings.

ECE 596 three credits
Directed Study
Prerequisite: Permission of the instructor, the director of the ECE graduate program, and the department chairperson.

Allows completion of a numbered course formally in the graduate program listing but not being offered as a scheduled class.

ECE 597 three credits
Underwater Acoustics I
3 hours lecture
Prerequisite: Fundamentals of Acoustics or background in partial differential equations

Underwater aspects of sound including review of the wave equation; wave solutions dispersion; acoustic radiation from plane circular pistons; introduction to continuous and discrete arrays and beam steering; introduction to transducer properties, sensitivities, and calibration; lumped acoustical elements including Helmholtz resonators and resonant bubbles; the Eikonal equation; normal modes in rectangular and cylindrical cavities; acoustic waveguides, group speed and phase speed. The wave equation and its application to acoustics and boundary value problems are reviewed. Velocity profiles in the ocean; ray tracing techniques; and propagation of sound in the sea, transmission losses, boundary effects and the sonar equations are also developed.

ECE 598 three credits
Underwater Acoustics II
3 hours lecture
Prerequisite: ECE 597

A continuation of Underwater Acoustics I. This course covers advanced aspects of underwater sound propagation including ray normal mode, parabolic and WKB approximations, shallow water treatments, surface and bottom reflection, scattering, reverberation, and ambient and self noise.

ECE 600, ECE 601, ECE 602 credits variable
Masters Graduate Thesis
Prerequisite: Submission of a formal proposal endorsed by an advising professor

Investigations of a fundamental and/or applied nature, intended to develop design techniques, research techniques, initiative, and self-reliance. A written thesis must be completed in accordance with the rules of the Graduate School and the College of Engineering. Admission to the course is based on a formal proposal endorsed by an advisor and submitted to the Graduate Director.

ECE 609 three credits
Parallel Processing
3 hours lecture
Prerequisite: Graduate standing

Fundamentals of parallel processing and supercomputing. Design and analysis of parallel algorithms for numerical and non-numerical algorithms, detection of data and control dependencies in algorithms, and transformation of sequential algorithms to parallel forms are studied.

ECE 610 three credits
Parallel Computer Architectures
3 hours lecture
Prerequisites: ECE 561, 562, or permission of instructor

A study of the state-of-the-art parallel computer architectures and supercomputers. Topics include parallel computational models, scaleable parallel processors, massively parallel processing (MPP) systems, interconnection networks, and parallel algorithms and their mapping on supercomputers.

ECE 615 three credits
Ocean Optics
3 hours lecture
Prerequisite: ECE 515

Interaction of light within the ocean and at the air-sea interface. The topics studied include hydrooptical characteristics, factors determining the optical properties of ocean water, molecular optics of ocean water, scattering by suspended particles, air-sea interactions and inverse problems.

ECE 624 three credits
Quantum Phenomena for Electrical Engineers
3 hours lecture
Prerequisite: Permission of instructor

Introduces concepts of quantum mechanics relevant to understanding of modern devices. Topics include the wave-particle nature of electrons, wave packets, scattering by simple barriers, WKB approximation, expectation values and operators, variational principle, perturbation theory, symmetry and degeneracy, and electrons in periodic crystal potentials.

ECE 625 three credits
Carrier Transport in Semiconductors
3 hours lecture
Prerequisite: Permission of instructor

Transport phenomena in semiconductors. Topics include a review of semi-classical carrier transport, the Boltzmann Transport Equation, limitations of drift-diffusion equations, scattering rates/mechanisms, charge and heat flow, Monte Carlo simulation, high-field transport, ballistic transport, and velocity overshoot.

ECE 631 three credits
Database Systems II
3 hours lecture
Prerequisite: ECE 541 or equiv.

An in depth view of database management systems architecture and operations. The focus is on architectural and operational aspects of transactions and transaction processing. Topics include properties of data in a database, database management systems architecture, transaction properties, transaction processing, transaction and database recovery, concurrency control, locking protocols, storage management and the application of concepts within various database systems. Included is a design project derived from topics covered.

ECE 632 three credits
Advances in Database Systems
3 hours lecture
Prerequisite: ECE 541 or equiv.

An in depth look at the architecture and operations of high perfor-mance distributed and client server database systems using concepts from the evolving SQL-3 object relational database model and the CORBA distributed systems model. The focus is on structural and design tradeoffs for major database management system control components. A team design project is a main element of the course. Topics include database and transaction structuring and processing, distributed and client server database systems architecture and operations, an overview of the CORBA specification, implementation and use, and application of course concepts to database systems design.

ECE 640 three credits
Theory and Applications of Wavelets
3 hours lecture
Prerequisites: ECE 574 (or equiv.) and graduate standing

A general study of the theory and applications of wavelets and filter banks. Wavelet theory provides very general techniques that can be applied to many tasks in signal processing, e.g., multiresolution analysis in computer vision, subband coding in speech and image compression, and wavelet series expansions in applied mathematics. The course is designed to enable participants to understand wavelet theory and to acquire a working knowledge of the techniques available in this signal processing area. In particular, a paramount goal is to enable each participant to develop a critical understanding of the advantages and limitations of wavelet analysis.

ECE 655 three credits
Ocean Data Acquisition and Processing Systems
3 hours lecture
Prerequisite: ECE 552

Focuses primarily on modern shipboard and underwater systems for measuring, analyzing and processing oceanographic, acoustic and optical ocean data. Topics include probes, sensors, and signal conditioning. Channel transfer functions, synoptic measurements and inverse problems are examined.

ECE 671 three credits
Elements of Information Theory
Prerequisite: ECE 521 and ECE 571 or equiv.

Entropy, mutual information and channel capacity, proof of source coding theorem and channel coding theorem, rate-distortion theory, vector quantization, probabilistic coding, maximum entropy methods in signal restoration, applications of information theory.

ECE 672 three credits
Signal Detection Theory
3 hours lecture
Prerequisites: ECE 521 and ECE 571 or equiv.

Bayes and Neyman-Pearson tests, composite hypothesis testing; signal theory; detection of known signals in Gaussian noise; detection of signals with random parameters in noise; multiple pulse detection of signals; generalized likelihood ratio test; Bayes and maximum likelihood estimators; comparison of communication systems; space-time processing; application to radar and sonar. (Replaces ECE 572)

ECE 673 three credits
Pattern Recognition
3 hours lecture
Prerequisite: ECE 521

Descriptions of patterns, problem formulation, linear and nonlinear classification theories, representation of patterns, feature selection, supervised estimation, unsupervised estimation, nonparametric methods in

pattern recognition, cluster and mode-seeking techniques, recursive algorithms using stochastic approximation, sequential pattern recognition, design of computer recognition experiments, linguistic approach to pattern recognition. (Replaces ECE 573)

ECE 674 three credits
Time-Frequency Methods for Signal Processing
3 hours lecture
Prerequisites: ECE 574 or equiv. and graduate standing

The analysis and processing of signals by means of time-frequency representations. The course covers many of the prevalent techniques that have been developed over the years for time-frequency signal analysis and addresses the characteristics and properties of time-frequency representations in Cohen's fixed kernel class, e.g., the spectrogram and the Wigner distribution. This course is intended for people who want to learn what time-frequency representations are all about. Gradually, the student learns about the terms that are pertinent to the field and develops an understanding for the "state-of-the-art" of this area of signal processing. Upon successful completion of this course, the student will be able to (1) comprehend the signal processing literature that addresses time-frequency representations and, consequently, (2) conduct research in this relatively new signal processing subfield.

ECE 675 three credits
Sonar Systems Engineering
3 hours lecture
Prerequisite: ECE 597 or ECE 521 or equiv.

Principles and design of sonar systems. Topics include complex array and element apertures (weighting) functions; beam shaping; linear, planar, and volumetric arrays; idrectivity and beam-forming; operating and installation of sonar systems; improving signal-to-noise ratios and atch arrays; wave vector spectrum filtering

ECE 676 three credits
Advanced Topics in Pattern Recognition
Prerequisites: ECE 673 and Ph.D. study

Decision theoretic pattern recognition with contextual information, sequential pattern recognition, error bounds, structural pattern recognition, syntactic and grammatical pattern recognition, error correction parsing, statistical and syntactic mixed models, neural networks and statistical pattern recognition, pattern recognition applications.

ECE 677 three credits
Neural Networks
Prerequisites: ECE 521 and ECE 572 or equiv.

Learning models, single and multilayer perceptrons, LMS algorithm backpropagation algorithms, radial basis function networks, Hopfield networks and Boltzman machine, self-organizing systems including Hebbian learning, Kohonen feature map algorithm, temporal processing neural networks, biological neural networks, VLSI implementation.

ECE 678 three credits
Digital Image Processing
3 hours lecture
Prerequisites. ECE 521 and ECE 574 or equiv.

Human vision models, 2-D sampling and quantization, image transforms, image enhancements, color image processing, image restoration, image and video compression, image segmentation by thresholding and region analysis, texture analysis, boundary descriptions, morphological methods, image processing system architecture (Replaces ECE 578)

ECE 679 three credits
Geophysical, Radar and Speech Signal Processing
3 hours lecture
Prerequisites. ECE 521 and ECE 574 or equiv.

Common mathematical frameworks in the processing of geophysical, radar, and speech signals are introduced, followed by a study of individual source mechanisms and transmission media. Specific digital filtering, deconvolution, spectral analysis and interference or clutter rejection techniques are discussed. Case studies for effective processing of seismic, radar and speech signals are also included. (Replaces ECE 579)

ECE 680 three credits
Computer and Robot Vision
3 hours lecture
Prerequisites. ECE 678 and Ph.D. study

Conditioning and labeling, the facet model, texture models, image segmentation and arc extraction, 3-D shape representation and shape recovery, surface reflection mechanism, shape from shading, range image analysis, stereo vision, 2-D and 3-D motion analysis, non-rigid body motion analysis, relational matching, 3-D object recognition, fundamentals of robot vision, architecture of computer vision systems.

ECE 697 three credits
Nonlinear Acoustical Theory
3 hours lecture
Prerequisite: ECE 597, or ECE 557 and permission of the instructor

Nonlinear acoustic fields and sources. Topics include nonlinear acoustics of fluids, turbulence and underwater explosions as sources of sound, parametric acoustic arrays, finite-amplitude effects, acoustic cavitation and streaming.

ECE 699 three credits
Acoustic Transduction/Electroacoustic Transducers
3 hours lecture
Prerequisite: ECE 557 or ECE597

Fundamental principles, design, and operation of transducers for the reception and generation of underwater sound. Topics include theory of simple radiators, electromechanical analogies, equivalent circuits, piezoelectric, electrodynamic, magnetostrictive, electrostrictive, and fiber optic transducers, reciprocity and reference calibration techniques, acoustic properties of transducer materials, accelerometer, geophone, seismometer, pressure gradient, cardioid, and omnidirectional sensor designs

ECE 700 credits variable
Graduate Seminar
Prerequisite: Graduate standing

ECE 701, ECE 702 nine credits each
Doctoral Dissertation Research
Prerequisites: Successful completion of Ph.D. comprehensive examination and approval of doctoral dissertation proposal by the student's graduate committee

Investigations of a fundamental and/or applied nature, that represent an original contribution to the scholarly research literature of the field. Ph.D. dissertations are often published in refereed journals or presented at major conferences. A written thesis must be completed in accordance with the rules of the Graduate School and the College of Engineering. Admission to the course is based on successful completion of the Ph.D. comprehensive examination and a formal proposal endorsed by the student's graduate committee and submitted to the Graduate Director.

Mechanical Engineering

Mechanical engineers are involved in a spectrum of technical activities from the design and manufacture of various products to fundamental research.

Mechanical engineers are concerned with the production, transmission and use of power. They design and develop systems which produce power, such as steam and gas turbines, internal combustion engines, nuclear reactors, jet engines, and rocket motors. They also design, develop, and manufacture devices which consume power in order to accomplish some useful result, such as refrigeration and air conditioning equipment, machine tools, rolling mills, and elevators, to name a few.

The environmental impact of these systems forms an integral part of their analysis and design. Mechanical engineers must cope with stringent standards of air and water quality, noise abatement and thermal pollution.

Graduates find employment in a number of areas, including private industry, government, consulting firms and education. They may be involved in one or more of the following: research, design, development, manufacturing, administration, management, sales or production supervision. Others continue studies in graduate school.

The Mechanical Engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

A student chapter of the American Society of Mechanical Engineers permits the student to initiate professional contacts through a program of technical and social events which introduces the student to practicing engineers from industry and students from other engineering schools.

Faculty and Fields of Interest

Ronald DiPippo thermodynamics, power plant design, geothermal energy, energy analysis

Sherif D. El Wakil computer-aided manufacturing, design for manufacturing, materials science

Alex J. Fowler fluid flow in porous media, heat transfer, thermodynamics, bioengineering

John W. Hansberry solid mechanics, control theory, machine design, vibration, safety engineering

I. Kattan manufacturing engineering systems, production planning and control, engineering optimization

Raymond N. Laoulache thermodynamics, multiphase flow, control systems, fluid mechanics, laser doppler anemometry, parallel computing

Tesfay Meressi robotics, control theory, machine design

John M. Rice (chairperson) solid mechanics, computer-aided engineering, finite element analysis, composite materials

T. K. Roy machine design, solid mechanics, shell dynamics, robotics

Thomas B. C. Shen heat transfer, thermodynamics, fire research, solid waste management

K. Srinagesh manufacturing processes, physical metallurgy, foundry engineering

Mechanical Engineering Major

BS degree

Throughout the program, the use of computer work stations is emphasized for the solution of complex problems and for the design and manufacture of components and systems. Hands-on design experiences occur throughout the curriculum, culminating in a senior project solving a real-life engineering program with realistic constraints of time as well as economic, aesthetic, safety, social and environmental implications. The students defend their work in an oral presentation before their class, faculty, guests and an invited panel of judges from local industries.

The first two years of the program include basic courses in the areas of mathematics, chemistry and physics, together with introductory courses in applied science such as mechanics, materials and electrical science. Specialization occurs during the last two years with courses available in the areas of thermodynamics, fluid mechanics, manufacturing processes and systems, control systems, materials behavior, energy, and mechanical design.

Areas of Concentration

Design:
MNE 441, 452, 462, 463, 480, 482, 485

Energy:
MNE 422, 423, 424, 425, 431, 432, 460, 492

Manufacturing:
MNE 472, 473, 476, 481, 482

Students should confer with advisors before selecting technical electives to assure that they meet requirements in engineering science and engineering design. Students who wish to select technical electives from other departments must receive prior approval from the mechanical engineering department.

Requirements

Semester Credits

		First	Second
First Year			
EGR 107, 108	Intro. Engineering through Applied Sci. I, II	3	2
PHY 111 (or 113)	Physics for Science & Engineering I	4	
PHY 112 (or 114)	Physics for Science & Engineering II		4
MTH 113 (or 111)	Calculus for Applied Sci. and Engineering I	4	
MTH 114 (or 112)	Calculus for Applied Sci. and Engineering II		4
CHM 153	Modern/Applied Chem. for Sci./Engrg. I **OR**	3	
CHM 151, 161	Princ. Modern Chem. I / Applied Chem. I (4)		
CHM 154	Modern/Applied Chem. for Sci./Engrg. II **OR**		3
CHM 152, 162	Princ. Modern Chem. II / Applied Chem.II (4)		
ENL 101*, 102	Critical Writing and Reading I, II	3	3
		17	**16**
Second Year			
EGR 231	Materials Science	4	
MTH 213 (or 211)	Calculus for Applied Sci. & Engineering III	4	
MNE 102	Programming and Computer Usage	3	
EGR 241, 242	Engineering Mechanics I, II	3	3
MTH 212	Differential Equations		3
MNE 201	Mechanical Engineering Laboratory I		1
MNE 220	Engineering Thermodynamics I		3
MNE 252	Mechanics of Materials		3
MNE 292	Intro. to Mechanical Engineering Design		1
		14	**14**
Third Year			
EGR 301	Applied Engineering Mathematics	3	
MNE 321	Engineering Thermodynamics II	3	
MNE 345	Design for Manufacturing	3	
MNE 381	Design of Machine Elements	3	
ECE 251	Electrical Measurement Laboratory I	1	
ECE 211, 212	Elements of Electrical Engineering I, II	3	3
MNE 305, 306	Mechanical Eng Lab II, III (biweekly)	1/2	1/2
MNE 332	Fluid Mechanics I		3
MNE 355	Manufacturing Processes Laboratory		1
ENL 266	Technical Communications		3
	General Education Elective		3
MNE	MNE Technical Elective**		3
		16 1/2	**16 1/2**
Fourth Year			
MNE 466	Control Theory	3	
MNE 491	Advanced Machine Design	4	
MNE 411	Heat Transfer	3	
MNE	Technical Electives**	3	3
	General Education Electives	3	9
MNE 494	Design Project		4
		16	**16**
	Total credits:		**127**

** Must be taken from approved list (shown to the right).

* ENL 101 section must be one that meets the Ethics and Social Responsibility general education requirement.

Technical Electives

MNE 422	Energy Conversion
MNE 423	Refrigeration & Air Conditioning
MNE 424	Geothermal Energy
MNE 425	Power Plant Design and Engineering
MNE 431	Fluid Mechanics II
MNE 432	Aircraft and Rocket Propulsion Systems
MNE 441	Mechanical Vibrations
MNE 442	Intro. to Numerical Methods
MNE 452	Mechanics of Materials II
MNE 460	Combustion Phenomena
MNE 462	Experimental Stress Analysis
MNE 463	Kinematic and Dynamic Analysis of Machines
MNE 471	Physical Metallurgy
MNE 472	Metal Forming Operations
MNE 473	Powder Metallurgy
MNE 475	Principles of Foundry Engineering
MNE 476	Manufacturing Quality Control
MNE 480	Computer-Aided Engineering
MNE 481	Computer-Aided Manufacturing
MNE 482	Robotics
MNE 485	Introduction to the Finite Element Method
MNE 490	Special Topics in Mechanical Engineering
MNE 492	Laser Doppler Anemometry in Fluid Flow

A proposal for experiential learning must be first sponsored by a faculty member and then approved by the full department. A proposal that meets minimum standards shall normally be approved for three free elective credits. An extraordinarily meritorious proposal may be approved for three technical elective credits only if it involves significant creative technical design with a tangible product.

Mechanical Engineering
Option in Manufacturing Engineering

Requirements

The Option in Manufacturing Engineering utilizes a core of courses already in the Mechanical Engineering major—EGR 221, EGR 231, MNE 345, and MNE 355—and a special selection of elective courses.

Students in the option in Manufacturing Engineering complete the requirements for Mechanical Engineering, at the same time making the following specific course selections:

- They must select ECO 231 and 232 within the social science elective courses for the Humanities/Social Science Requirement
- They must select four courses—the MNE Technical Electives and the Free Elective—from the following list: MNE 471, MNE 472, MNE 473, MNE 475, MNE 476, MNE 480, MNE 481, and MNE 482.

A proposal for experiential learning must be first sponsored by a faculty member and then approved by the full department. A proposal that meets minimum standards shall normally be approved for three free elective credits. An extraordinarily meritorious proposal may be approved for three technical elective credits only if it involves significant creative technical design with a tangible product.

Mechanical Engineering Courses

Gen Ed note: Mechanical Engineering courses satisfy the Natural Science and Technology requirement.

MNE 101 three credits
Engineering Design Graphics
2 hours lecture, 4 hours laboratory

An introductory course (1) to develop an awareness of the history and current status of the profession of engineering; (2) to impart the concepts associated with the design process, including the enhancement of creativity; (3) to develop graphic skills for the communication of ideas from the designer to the fabricator. Computer-aided graphics are emphasized.

MNE 102 three credits
Programming and Computer Usage
3 hours lecture
Prerequisite: MTH 111

Introduction to computer hardware and software. Computer mathematics; curve fitting; charting; spreadsheets. Data base management. Graphical representation; Applications in mechanical engineering.

MNE 201 one credit
Mechanical Engineering Laboratory I
3 hours laboratory
Corequisites: MNE 220, 252

Experiments to supplement Mechanics of Materials I and Engineering Thermodynamics I. Probability and statistical analysis are applied to experimental results. Topics such as experimental uncertainty, linear regression, normal distributions, confidence intervals, calorimetry, specific heats, engine performance, strain gauges, tensile and torsion testing are typically covered.

MNE 220 three credits
Engineering Thermodynamics I
3 hours lecture
Pre- or corequisites: CHM 152, MTH 211

The fundamental concepts and basic principles of classical thermodynamics. The Zeroth, First and Second laws of thermodynamics are formulated with recourse to empirical observations and then expressed in precise mathematical language. These laws are applied to a wide range of engineering problems. The properties of pure substances are described using equations of state and surfaces of state. Reversible processes in gases are analyzed by means of the First and Second laws. A representative sampling of engineering applications is discussed and analyzed.

MNE 231 three credits
Material Science
Prerequisites: CHM 151, CHM 152

The relation between the atomic or micro structure of engineering materials and their properties. Structures of metals, ceramics, polymers and composites are introduced. Experiments on equilibrium diagrams, metallographic structures, property changes of metals are included.

MNE 252 three credits
Mechanics of Materials I
3 hours lecture
Prerequisite: EGR 241

Material behavior and the concepts of equilibrium and compatibility of deformation are combined and initially applied to one-dimensional problems. Torsion of bars is discussed with application to problems of shaft design. Stress in beams of simple and composite shapes is considered as well as shear in beams and combined twisting and bending. Deflections of beams, shafts and structures are discussed using several calculation procedures. Stress and strain are considered in three dimensions with attention to principal directions. Buckling is considered and some attention is paid to plastic action in the various course topics.

MNE 292 one credit
Introduction of Mechanical Design
1 hour lecture, 2 hours laboratory
Corequisites: EGR 242, MNE 252

Mechanical design with emphasis on microcomputers as an aid to analysis and optimization. The concept of probabilistic design and the Monte-Carlo techniques are introduced. Attention is primarily paid to the solid mechanical aspects of the subject. Stress, flexibility and minimum weight considerations are addressed through introduction to the finite element method of analysis. Proper form for technical reports and calculations is discussed. Final oral presentation in class required.

MNE 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and

regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

MNE 305 one-half credit
Mechanical Engineering Laboratory II
3 hours biweekly
Corequisite: MNE 321

Extensive investigations into various commonly-encountered devices in areas of interest to the mechanical engineer. These include engines, turbines, water cooling towers, conduction, convection, radiation and refrigeration.

MNE 306 one-half credit
Mechanical Engineering Laboratory III
3 hours laboratory biweekly
Corequisite: MNE 332

Several experiments demonstrating the concepts in the course MNE 332 Fluid Mechanics I. These include: jet impact, Venturi meter, flow under a sluice gate, friction losses in tubes, introduction to data acquisition, and calibration of valves using computer control.

MNE 321 three credits
Engineering Thermodynamics II
3 hours lecture
Prerequisite: MNE 220

Mechanical engineering applications of ideal and real compressors; gas turbine power systems; various air-standard cycles including Brayton, Ericsson, Stirling, Otto, Diesel and Wankel cycles; and several vapor cycles including Carnot, Rankine, modified Rankine, and binary cycles. An introduction is given to vapor-compression refrigeration and heat pumps. Thermochemistry and combustion are discussed with emphasis on application of the First and Second laws to chemical reactions. Chemical equilibria in homogenous gas systems are studied.

MNE 332 three credits
Fluid Mechanics I
3 hours lecture
Prerequisites: MNE 220, MTH 211

Understanding the basic conservation equations in integral and differential form. The applications are concerned primarily with steady flows of inviscid, incompressible fluids. A brief discussion of similitude and modeling precedes the introduction to viscous flows. Flows in pipe systems with friction influences and including turbines and pumps are studied using the extended Bernoulli equations. The elements of incompressible potential flow are studied using real and complex potential functions.

MNE 345 three credits
Design for Manufacturing
3 hours lecture
Prerequisites: EGR 231, MNE 252

Discussion and comparison of manufacturing processes for economy of production; and modifications to proposed designs to suit existing equipment. Material selection to suit production and service requirements is covered along with economics of automation and inventory control.

MNE 355 one credit
Machining Operations
3 hours laboratory
Prerequisite: MNE 345

Machining operations using conventional and modern machine tools are covered. Basic principles of the statistic and probability theory as applied to quality control of machined parts are discussed and emphasized.

MNE 381 three credits
Design of Machine Elements
3 hours lecture
Prerequisites: MNE 252, EGR 242

Comprehensive survey of the analytical design methods that are valuable to mechanical engineers. Some of the areas covered are: stress analysis, fatigue, stress concentration, design of curved beams, selection of standardized elements, and lubrication. The objective of the course is to enable the student to handle design problems with confidence and assurance.

MNE 400 variable credits
Engineering Internship
Prerequisite: Senior standing

Experiential learning in conjunction with an industrial or governmental agency project under the joint supervision of an outside sponsor and a faculty advisor. To be eligible, a student should have completed the junior-year courses. A detailed project proposal must be prepared by the student for departmental approval prior to the start of the project. Typically, three credits will be assigned. Based upon the determination of the advisor and sponsor, the learning component shall be at least 100 hours out of the total work hours. Up to six credits may be assigned for exceptional projects that extend over two semesters. MNE 400 may be used to satisfy one 3-credit technical elective course.

MNE 411 three credits
Heat Transfer
3 hours lecture
Prerequisites: MNE 220, EGR 301

Principles of heat conduction, forced and free convection and thermal radiation, and their application to various engineering problems. Mass transfer and its analogy to heat transfer phenomena are sketched. Special problems, such as boiling and condensation, heat transfer in high speed flow, and fire propagation are introduced. Mathematical analysis motivated by physical reasoning is emphasized.

MNE 422 three credits
Energy Conversion
3 hours lecture
Prerequisites: MNE 321, 332, ECE 212, consent of instructor

An introduction to various energy resources, followed by a description of the use of chemical potential energy, nuclear energy and solar energy, the analysis and design criteria for various energy conversion devices, such as generators, transformers, motors, power distribution systems, solar cells, and so on. Understanding of working principles and essential design conditions is emphasized.

MNE 423 three credits
Refrigeration and Air Conditioning
3 hours lecture
Prerequisites: MNE 321, consent of instructor

Principles of refrigeration are presented with applications to vapor-compression, steam-jet and absorption systems, together with heat pumps. Psychrometrics and the physiological factors involved in air-conditioning are discussed along with the analysis of various processes. In particular the use and analysis of water cooling towers is emphasized.

MNE 424 three credits
Geothermal Energy
3 hours lecture
Prerequisites: MNE 321, 332, consent of instructor

A brief review of relevant topics from

thermodynamics, fluid mechanics and heat transfer. Elements of geology pertinent to geothermal energy are covered. The various types of geothermal resource are discussed. Technical systems of geothermal utilization are covered. Major emphasis is placed on the energy conversion systems which produce electrical power from geothermal resources. Dry steam, single and dual flash, binary, total flow, and hybrid systems are analyzed in detail. The environmental impact of geothermal energy usage and the economic factors associated with it are also discussed.

MNE 425 three credits
Power Plant Design and Engineering
3 hours lecture
Prerequisites: MNE 321, consent of instructor

Theory as a basis for plant design and equipment selection. Practical design calculations including heat balance are carried out. Fossil- and nuclear-fueled plants as well as gas turbine and hydroelectric plants are studied. The economics of alternatives is discussed.

MNE 431 three credits
Fluid Mechanics II
3 hours lecture
Prerequisites: MNE 332, consent of instructor

Basic equations of fluid mechanics, applied to quasi one-dimensional, compressible flows, including: isentropic flows with area changes, Fanno and Rayleigh flows, and normal shock waves. Two-dimensional flow fields are studied using Prandtl-Meyer expansion and oblique shock waves. The basic concepts are applied to selected topics such as: aircraft and rocket propulsion, combustion chambers in jets and rockets, wind tunnels and shock tubes, supersonic diffusers, and flow about supersonic airfoils.

MNE 432 three credits
Aircraft and Rocket Propulsion Systems
3 hours lecture
Prerequisites: MNE 321, 431, consent of instructor

The mechanics and thermodynamics of airborne propulsion systems. Thrust equations and efficiencies are derived from first principles and applied to a variety of systems. Airbreathing engines that are discussed include ramjets, turbojets, turbofans, and turboprops. The aero-thermodynamics of inlets and nozzles is presented. The course concludes with an introduction to rocket propulsion, including the identification and classification of types of rocket systems, fundamental definitions and derivations, and rocket dynamics.

MNE 441 three credits
Mechanical Vibrations
3 hours lecture
Prerequisites: EGR 242, 301, consent of instructor

Discussion of generalized coordinates and the Lagrangian method of determining a system's equations of motion. Normal modes and normal coordinates are introduced and the method of matrix iteration is used to find natural frequencies and modes. Free vibration of continuous systems is considered and techniques for finding natural frequencies are developed. Forced and transient responses of one degree of freedom systems are treated extensively, and forced response of multi-degree of freedom systems is discussed. Electrical analogies, use of the analog computer, and modeling of actual physical systems are discussed.

MNE 442 three credits
Introduction to Numerical Methods
3 hours lecture
Prerequisites: MTH 212

Numerical methods most useful to the engineer using structured programming. Topics discussed include numerical integration, differentiation, large system of linear and non-linear the use of spread-sheets for engineering calculations as well as solutions of nonlinear algebraic equations, system of ordinary differential equations. Also covered are criteria for stability and convergence and introduction to numerical techniques for partial differential equations.

MNE 452 three credits
Mechanics of Materials II
3 hours lecture
Prerequisites: MNE 252, EGR 301, consent of instructor

After reviewing the development of the flexure formula, the stress equation is derived for unsymmetrical bending. Curved beams loaded in the plane of curvature are analyzed as are beams with combined axial and lateral loadings. The general equation for beams on elastic foundations and its applications are studied. Stresses and deflections due to dynamic loads are examined. The basic equations of elasticity are developed and two-dimensional problems analyzed using Airy's stress function. Solutions are compared to strength of materials results. Energy methods are discussed. The Lagrange plate equation is derived and plates fabricated from modern composite materials are discussed.

MNE 460 three credits
Combustion Systems
3 hours lecture
Prerequisites: MNE 321, 332, 411, concurrently; consent of instructor

Review of fundamental aspects of combustion, with concentration on the following combustion systems: internal combustion engines, gas turbine power plant, fossil fuel power plant, modern solid waste incineration. Students will present special projects or several seminars.

MNE 462 three credits
Experimental Stress Analysis
3 hours lecture
Prerequisites: MNE 252, consent of instructor

The course is divided into two major parts. The first part of the course deals with theory and practice of photo-elastic methods applied to classical experimental stress analysis of models and are modified for use in photoelastic coatings. Three-dimensional problems are studied and solved by the use of the digital computer. Emphasis is on the interpretation, limitations and designing by photo-elasticity. The second part of the course presents the theory and application of mechanical and electrical strain gauges, and brittle coatings. Installation, instrumentation and circuitry of gauge set-ups or transducer use in experimental stress analysis are discussed.

MNE 463 three credits
Kinematic and Dynamic Analysis of Machines
3 hours lecture
Prerequisites: EGR 242, 301, consent of instructor

Introduction to the various types of mechanisms, their application and methods of operations. Four-bar linkages are discussed in detail with emphasis on the velocity and acceleration analysis of slider-crank, quick-return, scotch-yoke and intermittent motion mechanisms. Vector methodology is used extensively, along with

graphical and complex variable methods. Different types of cams and followers are studied and profiles determined satisfying given tie-displacement requirements. Both standard and non-standard gears are treated with regard to their construction, performance, usage and geometrical features. Various types of gear trains are analyzed. Force and torque analysis of various machine parts is performed for both static and dynamic conditions. Gyroscopic devices are treated. The course concludes with the study of balance of machinery under static and dynamic conditions.

MNE 466 three credits
Control Theory
3 hours lecture
Prerequisites: ECE 212, EGR 301

Introduction to sensors used widely in control systems. Analog as well as digital control of machines and processes are discussed along with modeling of control system elements and linearization method and its applicability. Both frequency and time domain control design techniques are discussed. Algorithms for computer control and the effect of sampling on stability are developed. Applications of analog control devices and microprocessors are included.

MNE 471 three credits
Physical Metallurgy
3 hours lecture
Prerequisites: EGR 231, consent of instructor

The structure of metals and alloys and their determination by x-ray diffraction. Structural imperfections and their influence on mechanical properties are considered. The election theory of metal introduced. Binary phase diagrams are studied on the basis of thermodynamic principles. Emphasis is placed on the iron-carbon system. Subjects such as creep and fatigue are also considered.

MNE 472 three credits
Metal Forming Operations
3 hours lecture
Prerequisites: EGR 231, consent of instructor

Plastic deformation in terms of dislocation theory. Various methods of the failure of metals are discussed and the field of plastic working and shaping is studied. Emphasis is on metallurgical interpretation and the influence of structure on mechanical properties. Operations such as forging, rolling, extrusion, and rod, wire and tube drawing are presented in some detail.

MNE 473 three credits
Powder Metallurgy
3 hours lecture
Prerequisites: EGR 231, consent of instructor

Characterization and production of powder. Measuring techniques and bulk properties. Powder compaction methods. Behavior of powders during compaction and green properties. Sintering. Material transport and transformations during sintering. Sintering atmospheres and furnaces. Properties of sintered materials. Engineering properties and product design applications.

MNE 475 three credits
Principles of Foundry Engineering
3 hours lecture
Prerequisites: EGR 231, consent of instructor

Principles relative to the following aspects of manufacturing metal castings: nature of cast metals; solidification of castings; need and design of risers; flow of metals and gating systems; molding materials and processes; design of castings and patterns; metal melting and refining in foundries: refractories, furnaces, reactions, inoculants.

MNE 476 three credits
Manufacturing Quality Control
3 hours lecture
Prerequisites: EGR 301, consent of instructor

Principles and procedures necessary to control processes and quality of manufactured products. Topics include: product quality, quality assurance, destructive and non-destructive tests, statistical methods in quality control, acceptance sampling, rectifying inspection, sensors, automated inspection, control charts, total quality control, quality circle, quality philosophy of Deming, Taguchi, and others.

MNE 480 three credits
Computer-Aided Engineering
3 hours lecture
Prerequisites: EGR 301, MNE 252, MNE 292, consent of the instructor

The fundamental concepts of computer-aided engineering (CAE). The topics include interactive computer graphics for 3D CAE systems; CAE hardware and software; solid modeling; and finite element analysis. Emphasis will be placed on the current state-of-the-art technology, the integration of CAE systems, and future trends. The student will also be introduced to the mathematics of computer graphics. Classroom lectures will be supplemented by laboratory demonstration of interactive graphics, and interactive finite element analysis.

MNE 481 three credits
Computer-Aided Manufacturing
3 hours lecture
Prerequisite: MNE 345; corequisite: MNE 355, consent of instructor

Scope, principles and various applications of computer-aided manufacturing. This involves the use of computers in monitoring and controlling of machine tools and manufacturing systems. The concepts of NC, CNC, DNC, computer-assisted part programming, group technology, computer-aided process planning, FMS and FMC will be discussed.

MNE 482 three credits
Robotics
3 hours lecture, 1 hour laboratory
Prerequisites: Senior standing, consent of instructor

Introduction to the various aspects of the mechanics of robotics, its classifications and terminologies involved. Direct and inverse kinematics of a robot manipulator are treated in detail with the application of homogeneous and Denavit-Hartenberg transformation techniques. Dynamics, control and programming of a robot manipulator are discussed with associated laboratory work.

MNE 485 three credits
Introduction to the Finite Element Method
3 hours lecture
Prerequisites: EGR 301, MNE 252, MNE 292, consent of instructor

Principles of the finite element method for solid mechanics. In addition, some fluid and heat flow problems will be covered. Topics include the direct method; energy methods; vibrational principles; interpolation functions; and the modeling of truss, beam, plate, and shell structures.

MNE 490 three credits
Special Topics in Mechanical Engineering
3 hours lecture
Prerequisite: consent of instructor

Visiting professors or members of the faculty present current topics of interest in their areas of expertise.

Note: Some graduate courses may be open to undergraduates. Please consult your department chairperson. See the *Graduate*

Graduate Courses in Mechanical Engineering

MNE 491 four credits
Advanced Machine Design
3 hours lecture, 2 hours laboratory
Prerequisite: Senior standing

The design of machines. The complete design process is carried out, from the conceptual stage through consideration of alternative designs to the final creation of the device. Extensive use of the computer is made to facilitate the process. Emphasis is placed on the design and automation of electro-mechanical and electro-hydraulic systems

MNE 492 three credits
Laser Doppler Anemometry in Fluid Flow
2 hours lecture, 3 hours laboratory
Prerequisites: MNE 332, consent of instructor

Introduction to laser doppler anemometry (LDA) in fluid flow. The following topics are considered: principles of LDA; doppler effect; fringe mode LDA; seeding; frequency shifting; digital data acquisition and signal processing; time correlation; spectra; experiments on flow over a cylinder and an air foil, on turbulent jets, pipe flow and wave motion.

MNE 494 four credits
Mechanical Engineering Design Projects
2 hours lecture, 6 hours laboratory
Prerequisite: MNE 491

Application of knowledge gained in various courses to the synthesis, analysis, and design of a system in a particular field of interest selected by student. The course culminates with oral presentations by each student before a panel of judges.

MNE 495 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

A student works under the direction of a faculty member and pursues a specific line of study in an area of interest to the student. The work may deal with subject matter not normally available in the curriculum, or may involve a design project. Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged. The work may deal with subject matter not normally available in the curriculum, or may involve a design project. Conditions and hours to be arranged.

MNE 196, 296, 396, 496 three credits
Directed Study
Lecture/laboratory arranged as required
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

MNE 501 three credits
Advanced Engineering Mathematics
Prerequisite: EGR 301 or equivalent

Ordinary differential equations: power series solutions; solutions to Legendre, Bessel, Hermite, associated Legendre, and Mathieu equations. Partial differential equations: separation of variables; transform methods; eigenvalues; Green's function; solutions to elliptic, parabolic and hyperbolic equations.

MNE 502 three credits
Applied Numerical Methods
Prerequisite: EGR 301 or equivalent

An introduction to the tools of numerical analysis used in all areas of engineering study. Solution of linear systems and non-linear systems of equations. Numerical integration of functions ODE's and PDE's: differentiation, error control, stability and accuracy.

MNE 503 three credits
Continuum Mechanics
Prerequisites: EGR 301 and MNE 252 or equivalents

A comprehensive study of the fundamental principles of Continuum Mechanics. The following topics are covered: stress, strain, and strain rated tensors; Lagrangian and Eulerian descriptions; conservation laws; constitutive relations; Navier-Cauchy and Navier Stokes equations; Newtonian fluids.

MNE 504 three credits
Advanced Mechanics of Fluids
Prerequisite: MNE 332 or equivalent

Integral Transformation: Divergence Theorem; Stokes Theorem. Reynolds Transport Theorem. Navier-Stokes equations. Kelvin's theorem. Vorticity Transport. Crocco's Theorem. Viscous flow: boundary layers, buoyancy-driven flows.

MNE 511 three credits
Theory of Elasticity
Prerequisite: MNE 503 or equivalent

Basic field equations. Generalized Hooke's law. General concepts of stress and strain. Equilibrium equations. Plane problems. Stress functions. Saint Venant torsion and flexure. Introduction to three-dimensional problems. Thermoelasticity. Anisotropic solutions.

MNE 512 three credits
Plasticity and Metal Forming Theory
Prerequisite: MNE 503 or equivalent

Tresca and von Mises yield criteria and their associated flow rules. Slip-line field theory and Geiringer velocity equations. Upper bound and lower bound theories. Application of the plasticity theories to rigid, perfectly-plastic bodies undergoing large plastic deformation in various metal forming processes such as wire drawing, extrusion, forging, deep drawing, etc.

MNE 513 three credits
Theory of Plates and Shells
Prerequisite: EGR 242, Pre or co-requisite: MNE 503

Basic plate and shell equations; solutions of different shape plates. Application of cylindrical and spherical shell equations. Linear and non-linear situations. Plates on elastic foundations. Numerical solutions of plates and shells. Membrane theory.

MNE 514 three credits
Marine Structural Engineering
Prerequisite: MNE 511

Stress in structures. Displacements and strains. Axis rotations. Mechanical behavior of engineering materials. Theory of elasticity. Bending and extensional stresses and deflections in beams. Physical aspects of the marine environment. Wave-induced loading and vibrations. Applications to cylindrical and spherical shell problems.

MNE 515 three credits
Finite Element Analysis
Prerequisite: MNE 485 or equivalent

A broad study of the principles of Finite Element Analysis. The following topics are covered: energy methods; variational principles; element formulation; coordinate transformation; problems in dynamics, solids, and heat transfer; non-linear problems; numerical errors and convergence; computer modeling.

MNE 516 three credits
Boundary Element Analysis
Prerequisite: MNE 485 or equivalent

Applications of weighted residual concepts. Practical use of the boundary element method for various problems in engineering with an emphasis on solid mechanics. Linear and nonlinear problems. Transient and steady state dynamic problems. Diffusion problems. Wave propagation problems. Potential problems.

MNE 517 three credits
Mechanics of Composite Materials
Prerequisite: MNE 503

Modeling of fiber-reinforced composites; property characterization methods; elastic and plastic behavior of fiber-reinforced composites; modes and mechanisms of failure; analysis of laminar composites; design of microstructure of polymer-matrix composites and application to structural components.

MNE 518 three credits
Advanced Physical Metallurgy
Prerequisites: EGR 231, EGR 221 or equivalents

Extending understanding of the effect of structure on the properties of metals and alloys. Deviation in various forms from perfect crystallinity will be analyzed. Metallurgical processes of typical ferrous and nonferrous alloys will be explored.

MNE 519 three credits
Metal Casting Principles
Prerequisites: EGR 231, MNE 345, MNE 411 or equivalents

Advanced concepts in solidification of alloys. Mutually dependent topics are: flow of liquid metals, transient heat transfer, phase and state change. Consequence of these in the design of sound castings will be presented.

MNE 521 three credits
Classical Thermodynamics
Prerequisite: EGR 232 or equivalent

An in-depth study of the fundamental principles of classical thermodynamics. The following topics are covered: equilibrium; temperature; equations of state; fundamental equations; First Law for steady, unsteady and continuous systems; Born-Caratheodory formulation of the Second Law; Third Law.

MNE 522 three credits
Statistical Thermodynamics
Prerequisite: EGR 232 or equivalent

The principles of thermodynamics based on a microscopic approach. The following topics are covered: statistical concepts, Kinetic Theory, Gibbsian ensembles, partition function, Liouville's theorem, Boltzmann equation and the Chapman-Enskog solution, calculation of equilibrium and transport properties.

MNE 523 three credits
Energy Analysis
Prerequisite: MNE 321 or equivalent

Thermomechnical availability. Chemical availability. Availability of sunlight. Energy property calculations and diagrams. Energy accounting; closed and open systems. Entropy production. Second Law efficiencies. Applications.

MNE 524 three credits
Energy Conversion Systems
Prerequisite: MNE 321 or equivalent

Vapor power cycles. Gas power cycles. Gas turbines. Jet propulsion. Internal combustion engines. Direct energy conversion: magnetohydrodynamics, fuel cells, photovoltaic cells. Alternative energy systems: wind, solar, geothermal, ocean thermal, tidal.

MNE 525 three credits
Bioengineering Fundamentals

Applications of thermodynamics, fluid mechanics and transport study to biological systems. An introduction to chemical kinetics, intercellular interactions and basic biomechanics are also included. Emphasis is on engineering with relevance to clinical and research medical applications.

MNE 531 three credits
Advanced Dynamics
Prerequisites: EGR 242, EGR 301 or equivalents

A course of study of technologically useful topics from dynamics, such as: three dimensional motion of rigid bodies; dynamics of flexible rotors and linkages; balancing of machinery and non-linear forces and stability. Variational methods and numerical techniques will be introduced.

MNE 532 three credits
Advanced Robotics
Prerequisite: MNE 482 or equivalent

Advanced course in kinematics, dynamics and control of robots. Topics covered include: trajectory generation, position and force control of open chain and closed chain manipulators, kinematic redundancy, link flexibility, artificial intelligence and integration of industrial robots in integrated manufacturing systems.

MNE 533 three credits
Manufacturing Automation
Prerequisite: MNE 345 or equivalent

A study of the different components of an automated manufacturing system. Design of the hardware and software used in the different manufacturing systems. Analysis, modeling, performance and economics of flexible manufacturing systems and flexible manufacturing cells. Design of parts to facilitate automatic assembly.

MNE 534 three credits
Advanced Vibrations
Prerequisites: EGR 242, EGR 301, or equiv.

Vibration of structures and machine components, Free and Forced Vibrations, Damped Vibrations, National Modes, Critical speeds, non-linear systems techniques, phase plane and function description methods.

MNE 535 three credits
Tribology
Prerequisite: MNE 332 or equivalent

Fiction of solids and fluids. Viscous flow. Hydrodynamic lubrication. Pressure in journal bearings. Flow characteristics of journal bearings. Stability. Variable viscosity. Application to bearings with varying loads and velocities. Infinitely long bearings. Gas lubrication.

MNE 536 three credits
Advanced Control Theory
Prerequisite: MNE 466 or equivalent

Advanced course in design of control systems. Topics covered include: input-output and state space description; controllability and observability of multi-input multi-output systems; pole placement; observer design and separation principle; linear quadratic optimal control; non-linear systems and linearization; Lyapunov stability theory; application to electromechnical systems.

MNE 541 three credits
Heat Conduction
Prerequisite: MNE 411 or equivalent

Basic heat transfer modes. Steady one dimensional problems with or without heat sources, constant or variable properties. Concepts of thermal resistance. Multidimensional heat conduction problems. Transient problems. Numerical treatment of heat conduction problems. Special applications in heat conduction field.

MNE 542 three credits
Convective Heat Transfer
Prerequisite: MNE 411 or equivalent

Boundary layer flow problems: laminar and turbulent plows. Thermal boundary layer plows. Dimensional analysis. Forced convection problems. Free convection problems. Duct flows. Boiling and Condensation. Special convection problems. Heat Exchange Design. Applications.

MNE 543 three credits
Radiation Heat Transfer
Prerequisite: MNE 411 or equivalent

Basic concepts and fundamental relations of thermal radiation. Radiation field; Kirchoff's laws. Radiation density. Radiation pressure. Blackbody radiation. Graybody radiation. Radiative heat exchanges among surfaces, in enclosures. Radiation through weakly absorbing media.

MNE 544 three credits
Combustion Fundamentals
Prerequisite: MNE 411 or equivalent

Principles of chemical thermodynamics. Review of chemical kinetics. Multicomponent reacting systems. Combustion of premixed gases. Premixed laminar flames. Turbulent flames. Single droplet burning. Spray combustion. Combustion in boundary layer flows. Ignition.

MNE 551 three credits
Compressible Fluid Flow
Prerequisite: MNE 431 or equivalent

Conservation laws. Wave propagation in compressible media. Isentropic flow. Normal and oblique shock waves. Prandt-Meyer flow. Converging-diverging nozzles and supersonic diffuses. Supersonic oblique shock diffuses. Exit flow for underexpanded and overexpanded supersonic nozzles. Fanne line flow. Rayleigh line flow.

MNE 552 three credits
Computational Fluid Mechanics
Prerequisite: MNE 504

Solutions to Navier-Stokes equations. Finite difference methods: Lax-Wendroff, MacCormack, Rusanov, implicit, forward-time and centered-method, leap-frog/Dufort-Frankel, ADI, predictor-corrector methods. Grid generation. Accuracy and convergence.

MNE 560 three credits
Methods of Experimental Research
Prerequisite: Graduate standing

The need and subject matter of research. Laws, truths, analogy and hypothesis. Identifying and clustering parameters. Use of models. Experimental setup. Induction, deduction, statistics, and conclusions. Presentation and use of finding.

MNE 570 three credits
Reading and Research
Prerequisite: Graduate standing and approval of student's graduate committee

Independent study under faculty supervision. Intensive literature search culminating in a technical report. Oral presentation at the option of the faculty.

MNE 580 six credits
Masters Thesis
Prerequisites: Graduate standing, Thesis Option, and approval of the student's Graduate Committee

Thesis research on an experimental or theoretical project in mechanical engineering under a faculty advisor. A formal thesis must be submitted to fulfill the course requirements.

MNE 590 six credits
Masters Project
Prerequisites: Graduate standing, Project Option, and approval of the student's Graduate Committee

Project research in conjunction with industry under a faculty advisor. A formal report must be submitted to fulfill the course requirements.

Electrical Engineering Technology and Mechanical Engineering Technology

Electrical Engineering Technology and Mechanical Engineering Technology at UMass Dartmouth are upper-division programs articulated with lower-division engineering courses offered at Bristol Community College. The UMass Dartmouth courses are offered through the Division of Continuing Education; the Electrical and Mechanical Engineering Technology programs do not have day-division students.

Electrical Engineering Technology is overseen by the Department of Electrical Engineering Technology. Mechanical Engineering Technology is overseen by the Department of Mechanical Engineering.

Electrical Engineering Technology Major BS degree

The objective of the Electrical Engineering Technology program is to produce technologically educated individuals who can understand the current state-of-art and the fundamentals of electrical/electronic systems and processes. Typically, the Engineering Technologist applies established engineering design principles and procedures to manufacturing, maintenance and other technical and industrial operations.

The work done by the Electrical Engineering Technologist requires a practical understanding of engineering methods and principles applied to solving technical problems. To that end the instructional program in EET emphasizes the application of the mathematical and engineering methods and principles, stressing "how" more than "why." The technical science and mathematics content of the curriculum provides the basis for developing analytical skills and for avoiding short- term obsolescence in a rapidly changing profession. The English, humanities and social science content provides skills and insights required to communicate and work effectively with others in subordinate and super-ordinate capacities. Technical electives provide state-of-the-art knowledge required to perform problem solving tasks and routine development tasks in specific technical areas. The laboratory work, which culminates in a senior design project, gives the student not only a learning experience in laboratory procedure and exposure to electrical/electronic equipment, but also an opportunity to learn how to plan work in cooperation with others.

Requirements

		Semester Credits	
		First	**Second**
First Year *(equivalent courses from Bristol Community College)*			
CHM 101	General Chemistry I	3	
MTH 131	Introductory Mathematics	3	
EET 101	Computer Tools	3	
ENL 101, 102	Critical Writing and Reading I, II	3	3
PHY 103, 104	General Physics Lab I, II	1	1
PHY 107, 108	Basic Physics I, II	3	3
CIS 261	Computer Programming/FORTRAN		3
EET 221	Electric Circuits I		3
EET 251	EET Lab I		1
MTH 105	Technical Calculus I		3
		16	**17**
Second Year *(equivalent courses from Bristol Community College)*			
EET 222	Electric Circuits II	3	
EET 261	Fundamentals of Digital Logic	3	
EET 252, 253	EET Lab II, III	1	1
MET 231, 232	Mechanics I, II	3	3
MTH 106, 203	Technical Calculus II, III	3	3
EET 263	Introduction to Microprocessors		3
EET 212	Electronics I		3
	General Education Electives	3	3
		16	**16**
Third Year			
ENL 266	Technical Communications	3	
EET 341	Electromechanical Energy Conversion	3	
MTH 204	Elementary Differential Equations	3	
EET 311, 312	Electronics II, III	3	3
EET 321, 322	Circuit Analysis & Design I, II	3	3
EET 351, 352	EET Lab IV, V	1	1
EET 332	Transmission Lines and Waves		3
	*Stipulated Elective		3
	General Education Elective		3
		16	**16**
Fourth Year			
EET 472	Applied Communications	3	
EET 451, 452	Design Project I, II	3	3
	Technical Electives	6	6
	Free Elective		3
	General Education Electives	3	3
		15	**15**
		Total credits:	**127**

* Requires advisor approval:

(a) Science Course
(b) Engineering Course
(c) Business Course
(d) Economics Course

Contact, for both major programs:

Robert Helgeland, Professor of Electrical and Computer Engineering

EET 311 three credits
Electronics II
3 hours lecture
Prerequisite: EET 212

Review of diodes and bipolar transistors. Field-effect transistors are introduced. Low-frequency and high-frequency equivalent circuits are developed. Frequency response, multistage amplifiers, and differential amplifier circuits are studied. Operational amplifiers and their applications are discussed. Computer methods are used extensively in the solution of homework problems.

EET 312 three credits
Electronics III
3 hours lecture
Prerequisite: EET 311

Large-signal power amplifiers are discussed at length. Thermal parameters, heat sinks, and their applications are studied. Basic digital electronic circuits such as gates, flip-flops, shift registers, and counters are introduced. Logic families such as TTL and CMOS are presented.

EET 321 three credits
Circuit Analysis and Design I
3 hours lecture
Prerequisites: EET 222, MTH 106

Waveform analysis, time-domain steady-state and transient analysis, Laplace transform methods, transfer functions, frequency response and Bode plots.

EET 322 three credits
Circuit Analysis and Design II
3 hours lecture
Prerequisite: EET 321

Fourier series, Fourier transforms, and their application to circuit analysis. Numerical methods and FFT computer programs. Filter circuits and their design using computer methods.

EET 332 three credits
Transmission Lines and Waves
3 hours lecture
Prerequisites: PHY 108, MTH 203, EET 321

Techniques for the calculation of capacitance, inductance, voltage breakdown, dielectric loss, and skin depth. Wave propagation in free space is discussed and guided propagation via transmission lines is studied in detail. Subjects include standing waves, reflections, SWR, impedance matching, and the Smith Chart. Antenna theory and design are also studied. Gain, beamwidth, radiation resistance, and effective area are explained and antenna configurations are discussed and analyzed.

EET 341 three credits
Electromechanical Energy Conversion
3 hours lecture
Prerequisite: EET 222

Electromechanics as applied to energy conversion devices, followed by studies of specific devices such as dynamos and other transducers including transformers. Mathematical models of typical physical devices are discussed.

EET 351 one credit
Electrical Technology Laboratory IV
3 hours laboratory
Prerequisites: EET 253, 261
Corequisite: EET 311

The experiments in this laboratory coordinate with the EET course work in the first semester of the junior year.

EET 352 one credit
Electrical Technology Laboratory V
3 hours laboratory
Prerequisite: EET 351
Corequisites: EET 312, 322, and 332

The experiments in this laboratory coordinate with the EET course work in the second semester of the junior year.

EET 363 three credits
Advanced Microprocessors
3 hours lecture
Prerequisite: EET 263

A study of 16/32 bit microprocessors with emphasis on the MC 68000. The general features of the MC 68000 such as pin functions, addressing modes and instruction sets are covered. Primitive instructions for high level software, exception handling and machine code generation are also covered. The development tools used in the course include the HEX68KECB module.

EET 400 three credits
Electrical Engineering Technology Internship
Prerequisite: Completion of 75 credits in the EET Program

Experiential learning in conjunction with an industrial or governmental agency project under the joint supervision of an outside sponsor and a faculty advisor. To be eligible, a student should have completed 75 credits in the EET Program. A detailed project proposal must be prepared by the student for departmental approval prior to the start of the project. Typically, three credits will be assigned. The learning component must be a significant portion of the total work experience.

EET 403 three credits
Topics in Rehabilitation Engineering
3 hours lecture
Prerequisites: EET 312, 352, 261 (ECE 361)

Classical problems and contemporary solutions in rehabilitation engineering. Opportunities will be presented for interaction with health care professionals and with individuals having disabilities. Each student will complete a paper or a hardware project to benefit a specific case.

EET 413 three credits
Introduction to VLSI Design I
3 hours lecture
Prerequisites: EET 312, 261

An introduction to the design of Very Large Scale Integrated (VLSI) circuits. Several concepts introduced in the Digital Logic Fundamentals course and the Electronics courses will be expanded upon and used to design chips using the design tools available in the Computer Aided Engineering (CAE) laboratory. These chips may be submitted for actual fabrication as part of a student's project. Emphasis will be placed on using the available tools to do CMOS design and testing.

EET 414 three credits
Introduction to VLSI Design II
3 hours lecture
Prerequisite: EET 413 taken semester immediately preceding or permission of instructor

A continuation of EET 413. The course is centered on a one-semester class project in which a chip of moderate complexity is designed and fabricated for testing. Modularity, circuit timing, and design testability criteria are emphasized. VLSI design of finite-state machine will be discussed.

EET 415 three credits
Digital Devices and Systems I
3 hours lecture
Prerequisite: EET 261

Modern integrated logic circuits. Analytical study of gates, using primarily the TTL bipolar logic family. Combinational and sequential circuits. Algorithmic State Machine (ASM) chart used in "top-down" design. MSI and LSI logic circuits.

EET 416 three credits
Digital Devices and Systems II
3 hours lecture
Prerequisite: EET 415

Construction, analysis and operation of the discrete and integrated FET. Study of the basic gate in MOS, CMOS and SOS technology. Configuration and application of MSI circuitry such as Flip Flops, Shift Registers, Scalers, Counters, etc. Examples of LSI circuitry such as fixed and variable format, programmable, and nonprogrammable memory systems.

EET 431 three credits
Microwave Theory and Techniques
3 hours lecture
Prerequisite: EET 332

Guided transmission of electromagnetic waves by means of coaxial and waveguide systems. Transmission line theory and the Smith Chart. The design of cavities, couplers, filters, and attenuators. Microwave generation, detection, and measurements.

EET 432 three credits
Microwave Techniques
3 hours lecture
Prerequisite: EET 431 or ECE 435

Microwave properties of ferrite and semiconductor materials and their applications to circulators, isolators, parametric amplifiers, switches, and phase changers. Klystrons and magnetrons will be described.

EET 443 three credits
Power Systems Analysis I
3 hours lecture
Prerequisites: EET 222; EET 341 desirable

Review of electric power system components (generators, transformers, transmission lines, and loads). Proper modeling of component parts will be studied. Methods of load-flow analysis including computer methods. A first course of a two-semester sequence on electric power system analysis.

EET 444 three credits
Power System Analysis II
3 hours lecture
Prerequisite: EET 443

Continuation of EET 443. The study of symmetrical three-phase faults, use of symmetrical components, and unsymmetrical faults. System protection and system stability will be discussed also. Computer methods will be used throughout the course.

EET 451 three credits
Design Project I
1 hour lecture, 6 hours laboratory
Prerequisites: EET 332, 352
Corequisite: EET 472

Introduces the student to well-structured projects in the laboratory. The course consists of design projects and experiments of one to three weeks duration in the areas of digital electronics, communication networks, and microwaves, and will challenge the student to use the material learned in his or her other courses.

EET 452 three credits
Design Project II
1 hour lecture, 6 hours laboratory
Prerequisite: EET 451

A continuation of EET 451 with more emphasis on self reliance. The course consists of a semester-long comprehensive laboratory design project and will be as closely related to industrial experience as possible.

EET 462 three credits
Audio Engineering Technology
3 hours lecture
Prerequisite: Senior EET or ECE standing

Audio signals and distortion. Recording, amplifying, and speaker systems. An intensive presentation of digital audio signals and compact disc (CD) player technology is included.

EET 472 three credits
Applied Communications
3 hours lecture
Prerequisites: EET 312, 322

The general principles of Electronic Communications at a systems level. Modulation, demodulation, and sampling are discussed. Random signal analysis is presented, and a survey of various digital communication systems is included.

EET 475 three credits
Digital Signal Processing
3 hours lecture
Prerequisite: EET 322

Digital signal processing technology including an introduction to linear systems, analog-to-digital and digital-to-analog converters, discrete-time signals, z-transforms, digital filters, discrete Fourier transforms, fast Fourier transforms, and processor integrated circuits.

EET 495
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

EET 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Mechanical Engineering Technology Major

BS degree

Mechanical Engineering Technology shares with other areas of Engineering Technology the goal of providing support to engineering activities through the application of scientific and engineering knowledge and methods. Students should consult the section above that gives a general description of the field of engineering technology and its career opportunities.

Mechanical Engineering Technology encompasses the methods that are employed as well as the practice that is applied in the design, development, manufacture, operation and installation of machinery, boilers, structures, transportation equipment, heating and air-conditioning equipment as well as other equipment which involves the interaction of mechanical, electrical, fluid, and thermodynamic forces.

Mechanical technologists not only translate the ideas of the engineers and scientists into reality but also bring to the technological team a knowledge of practical production techniques. In industry, the mechanical technologist is frequently found in a supervisory position over technicians and drafting staff. Employment opportunities are with engineering design organizations, public utilities, and corporations dealing with manufacturing and production.

In addition to fundamental mechanical technology courses, the curriculum contains courses in mathematics, science, humanities, and social science in order to prepare the student to assume a productive role in society upon graduation. During the first year, students develop the skill to produce production drawings by taking two courses in graphics. The concentration in the second and third years is on basic mechanical engineering subjects and the fourth year is highlighted by courses in machine design and CAD/CAM, culminating in a mechanical technology design project.

Requirements

		Semester Credits	
		First	**Second**
First Year *(equivalent courses from Bristol Community College)*			
MTH 131	Introductory Mathematics	3	
CHM 101	General Chemistry I	3	
MET 101, 102	Graphics I, II	3	3
PHY 107, 108	Basic Physics I, II	3	3
PHY 103, 104	Basic Physics Laboratory I, II	1	1
ENL 101, 102	Critical Writing and Reading I, II	3	3
MTH 105	Technical Calculus I	3	
CIS 111	Computer Programming-PASCAL		3
		19	**13**
Second Year *(equivalent courses from Bristol Community College)*			
MTH 106, 203	Technical Calculus II, III	3	3
MET 217, 218	Manufacturing Laboratory I, II	1	1
MET 219, 220	Manufacturing Processes I, II	3	3
MET 231, 232	Mechanics I, II	3	3
	Humanities/Social Science Electives	6	3
MET 222	Elements of Materials Science		3
MET 223	Elements of Materials Science Laboratory		1
		16	**17**
Third Year			
MTH 204	Differential Equations	3	
MET 302	Kinematic Analysis of Machines	3	
EET 221, 222	Electric Circuits I, II	3	3
EET 251, 252	Electrical Technology Laboratory I, II	1	1
MET 306, 307	Mechanics of Materials I, II	3	3
MET 321, 322	Thermodynamics I, II	3	3
MET 342, 343	Mechanical Technology Laboratory I, II	1	1
ENL 266	Technical Communications		3
MET 332	Fluid Mechanics		3
		17	**17**
Fourth Year			
MET 412	Instrumentation and Control Circuits	3	
MET 422	Machine Design I	3	
MET 432	Dynamic Analysis of Machines	3	
	Humanities/Social Science Electives	3	3
	Technical Electives	3	6
MET 424	Mechanical Technology Design Project		3
MET 480	CAD/CAM for Technology		3
		15	**15**
	Total Credits:		**129**

MET 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

MET 302 three credits
Kinematic Analysis of Machines
2 hours lecture, 3 hours laboratory
Prerequisite: MET 232

Analysis of the relative motion of machine parts to determine displacement, velocity, velocity and acceleration graphs and polygons, cams, rolling contacts, gearing, flexible connectors, gear trains, translations, screws, and dimensional synthesis.

MET 306, 307 three credits each
Mechanics of Materials I, II
3 hours lecture each
Prerequisites: MET 231 for MET 306; MET 306 for MET 307

Study of the stresses and strains that occur due to tensile, compression and shearing forces. Shear and bending moment diagrams, investigation and design of beams and deflection of beams are included. Statically indeterminant members, eccentrically applied load, torsion, and column action are also studied.

MET 321, 322 three credits each
Thermodynamics I, II
3 hours lecture each
Prerequisites: MTH 203 for MET 321; MET 321 for MET 322

Properties of substances, first and second laws of thermodynamics, ideal gases, liquids and vapors, heat exchangers, steam turbines, and the reversed cycle.

MET 332 three credits
Fluid Mechanics I
3 hours lecture
Prerequisite: MET 321

Hydrostatics and hydrodynamics; ideal viscous fluids; compressible and incompressible fluids. Also studied are flow of real fluids in pipes and around immersed objects, boundary layer, lift and drag, flow measurement.

MET 342, 343 one credit each
Mechanical Technology Laboratory I, II
3 hours laboratory each

Basic definitions, physical concepts and testing procedures. The first portion is devoted to experiments in strength of materials and general techniques of mechanical testing of materials. The second portion concentrates on measurements in heat/power and fluid flow. Emphasis is placed on the presentation and interpretation of data.

MET 403 three credits
Tool Engineering
3 hours lecture
Prerequisite: Senior standing

An understanding of the fundamental force, energy and wear characteristics involved in tool operations, related to economics of the manufacturing processes. Topics covered include: characteristics of material behavior, metal cutting and forming, and manufacturing economics. Design and analysis of the following tools are considered: single-point tools, axial-feed rotary tools; press-working tools including piercing, blanking, compound and progressive dies, and work-holding devices.

MET 405 three credits
Foundry Engineering
3 hours lecture
Prerequisites: MET 219, 222

Various aspects of foundry operation. Topics include molding, core, casting design, pattern design, solidification, feeding systems, metal melting, cleaning, inspection, mechanization, economics, and management.

MET 411 three credits
Heat Transfer
3 hours lecture
Prerequisite: MET 322

Steady-state conduction, free and forced convection, radiant heat transmission, and the design of heat transfer equipment.

MET 412 three credits
Instrumentation and Control Circuits
3 hours lecture
Prerequisite: EET 222

Analysis and design of operational circuitry and measurement of non-electrical quantities; transducers are also studied.

MET 414 three credits
Heat Exchanger Design
3 hours lecture
Prerequisite: MET 411

Examination of heat transfer devices. Topics presented are: heat exchanger performance analysis and design procedure; heat transfer surface analysis; importance of various design parameters and optimization processes; geometrical configurations of various heat exchangers; specific applications of various heat exchangers with temperature dependent fluid properties; flow nonuniformity on the performance of heat exchanger; heat exchanger tests.

MET 422 three credits
Machine Design I
3 hours lecture
Prerequisite: MET 307

Survey of methods, simplified and sophisticated, in mechanical equipment design. Presentation of subject matter, whenever possible, features the distinction between the levels of sophistication appropriate for a given design situation. In assignments, the student should make design decisions in preparation for the experiences that are likely to be encountered in the design project course and as engineers upon graduation. Some of the areas covered are: design procedures, simple stress analysis, varying stresses, stress concentration, combined stresses, design of fasteners and springs.

MET 423 three credits
Machine Design II
3 hours lecture
Prerequisite: MET 422

A continuation of Machine Design I. Areas covered include lubrication, sliding and rolling contact bearings, shaft design; gear design, flexible connectors and clutches.

MET 424 three credits
Mechanical Technology Design Project
1 hour lecture, 6 hours laboratory
Prerequisite: MET 422

Special design project chosen by the student with approval of instructor. Investigation and creativity are encouraged in the design process. A final report with recommendations and specifications will be submitted at the conclusion of the course and hardware will be produced as the final product of the course. Oral presentations are made by each student.

MET 431 three credits
Internal Combustion Engines
3 hours lecture
Prerequisite: MET 322

Study of the internal combustion engine processes, including the air standard cycle analysis; engine cycles; deviation of the real engine from the ideal engine; detonation, carburetion; fuel injection, combustion chamber and cylinder head design; engine lubrication; cooling and performance.

MET 432 three credits
Dynamic Analysis of Machines
2 hours lecture, 3 hours laboratory
Prerequisite: MET 232

Principles of dynamics of machines. Topics covered include: static forces in machines, inertia forces in machines, fly-wheel balancing, rotating and reciprocating masses, gyroscopic effects, critical speeds of shafts and the determination of natural frequencies and mode shapes of multidegree of freedom systems. A weekly laboratory session involves experiments dealing with balancing, resonance, analog computer simulation, sound measurements and digital computer techniques.

MET 433 three credits
Fluid Mechanics II
3 hours lecture
Prerequisite: MET 332

Torque in rotating machines, system curves, specific speed and similarity laws. Selection of turbines to suit various conditions of operation including small hydroelectric plants. Centrifugal and axial flow pumps, pump selection, cavitation and special problems of pump installation. The course concludes with compressible flow in fans and blowers.

MET 445 three credits
Photoelasticity with Laser Applications
3 hours lecture
Prerequisite: MET 307

Photoelasticity and laser applications in engineering. The first part concerns polarized light and its use in stress analysis, introduceing the student to techniques and instruments used in photoelastic analysis of stressed models. Current use of industrial photoelasticity will be emphasized. The second part concerns laser applications in engineering. A review of ray optics, refraction, reflection, and lenses serves to introduce laser light properties. The course concludes with an introduction to holography and current industrial applications.

MET 462 three credits
Introduction to Quality Management
3 hours lecture
Prerequisite: Senior standing

Quality management concepts and techniques. The tasks of quality management are explained and discussed. Examples derived from actual experience will be presented.

MET 480 three credits
CAD/CAM For Technology
3 hours lecture
Prerequisite: MET 422

Covers the current CAD/CAM technology with the use of an interactive graphics system. Topics include 2D and 3D CAD systems, multiview and pictorial drawings, wireframe, solid modeling, shading and highlighting. Some manufacturing topics will be discussed.

MET 484 three credits
Computer-Aided Manufacturing Technology
2 hours lecture, 3 hours laboratory
Prerequisites: MET 218, 220

Techniques and limitations in the programming of numerical control machine tools using manual and computer- assisted programming methods. Laboratory experience with CNC equipment and computer-assisted part programming systems is provided to supplement the lecture.

MET 495 three credits
Independent Study
Lecture/laboratory arranged as required
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Student works under the direction of a faculty member and pursues a specific line of study in an area of interest to the student. The work may deal with subject matter not normally available in the curriculum, or may involve a design project. Conditions and hours to be arranged.

MET 196, 296, 396, 496 three credits
Directed Study
Lecture/laboratory arranged as required
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Physics

The fields of interest in physics are remarkably broad in scope. Physicists are involved in theoretical studies, in experimental research, and in the development of new devices to uncover the mysteries of nature; they probe the depths of space, design and program computers, solve environmental problems, teach science, and investigate the structure of nuclei. Research in physics has often paved the way for technological innovations such as lasers, fusion power, solar cells, diagnostic techniques in medicine, and solid-state electronics. Physicists lead some of the world's major technology companies. Physicists spearheaded the development of the vast Internet computer network.

The powerful array of technical skills acquired by physics majors—critical thinking and problem solving, computers, electronics, mathematical analysis, technical writing—are of practical importance in many areas of theoretical and applied science. Employers value the broad training, versatility, and laboratory experience of physics graduates.

The department's course offerings include classical and quantum mechanics, electricity and magnetism, electronics, statistical and condensed-matter physics, astrophysics, oceanography (new), environmental physics, earth science, physics of music and several courses dealing with the impact of science on society. Students are encouraged to participate in research in physical oceanography, particle physics, theoretical physics, liquid crystals, physics education and astronomy. In addition, many possibilities exist for physics students to study and participate in research in areas such as computer science, acoustics, electro-optics with faculty in closely-related departments in engineering, science, and mathematics.

The physics department has a wide array of equipment, including computers, lasers, x-ray apparatus, nuclear magnetic resonance device, and a fully-equipped observatory with computer-controlled telescope and electronic CCD imaging camera. Faculty and physics students also have access to the giant particle accelerators at the Brookhaven National Laboratory on Long Island. A new Marine Science lab opens in Spring 1997 and includes facilities for physical oceanography, a new area of specialization in the department that will take advantage of UMass Dartmouth's proximity to Wood's Hole Oceanographic Institute and other nearby research labs.

Faculty and Fields of Interest

Robert Bento science and society, meteorology, environmental physics

Jim Bisagni physical oceanography

Renate Crawford liquid crystals, displays, surface science

Avijit Gangopadhyay physical oceanography, numerical modeling

Alan Hirshfeld astrophysics

Jong-Ping Hsu symmetry principles and gauge field theories

George Yan-Chok Leung (chairperson) theoretical particle physics, astrophysics

John Silva earth science-geology, physics education

Amit Tandon physics

Paul Ukleja liquid crystals, nuclear magnetic resonance

Jay (Jianyi) Wang theory and simulations of electronic, atomic and optical processes, ion-solids and ion-surface interactions, computational physics

Marguerite Bralts-Zarrillo traffic engineering and astrophysics

Faculty in Related Fields

Several members of other departments teach courses with a large component of physics and carry out research in areas which may interest physics students. The following faculty members are included in this category. Students should always feel free to propose interdisciplinary projects, even if faculty involved are not on this list.

Electrical and Computer Engineering

David A. Brown acoustics and transduction

John R. Buck underwater acoustics and signal processing

Lee E. Estes electro-optics, underwater systems

Mathematics

Dana Fine applied math, gauge theory

Physics Major

BS degree

Career plans of the physics major may include graduate study in physics, materials science, biophysics, geophysics, oceanography, medical physics, or in various branches of applied science or engineering. Other physics majors establish careers in industrial or government laboratories or teach in secondary schools. A major in physics is sometimes selected by students wishing to enter the professions of law, business or medicine with the competitive edge that a good physics background can provide.

The advanced courses selected during the third and fourth years should be consistent with the students' interests and goals. These interests may be in physics or in allied fields such as astronomy, computer science, environmental science, biophysics, meteorology and oceanography.

Students are encouraged to arrange supervised independent study as well as work on individual research projects. There are frequent opportunities for student participation in faculty research.

Students should consult frequently with their departmental advisors and familiarize themselves with department activities such as the meetings and special lectures of the Physics Club.

The department also offers a graduate program leading to the Master of Science degree in physics and, in conjunction with UMass Amherst, offers a cooperative Ph.D. program.

Physics Major
Conventional Option

Requirements

		Semester Credits	
First Year		**First**	**Second**
EGR 107, 108	Intro. Engineering through Applied Sci. I, II	3	2
PHY 111 (or 113)	Physics for Science & Engineering I	4	
PHY 112 (or 114)	Physics for Science & Engineering II		4
MTH 113 (or 111)	Calculus for Applied Sci. and Engineering I	4	
MTH 114 (or 112)	Calculus for Applied Sci. and Engineering II		4
ENL 101*, 102	Critical Writing and Reading I, II	3	3
	Humanities/Social Science Electives	3	3
		17	**16**
Second Year	(Recommended Sequence)		
PHY 115	Introduction to Classical Physics	3	
PHY 213	Applied Modern Physics		3
PHY 225, 227	Introductory Experimental Physics I, II	2	1
PHY 234	Intermediate Mathematical Physics		3
MTH 211	Analytic Geometry and Calculus III	4	
	Humanities/Social Sciences, Literature	6	3
		15	**14**
Third Year	(Recommended Sequence)		
PHY 341, 342	Modern Physics and Quantum Mechanics I, II	3	3
	Humanities/Social Sciences or Literature	3	
	Physics Electives (minimum required)**	3	3
	Additional Physics Electives or Free Electives	3	6
	Second Science or Mathematics or Engineering Electives***	3	3
		15	**15**
Fourth Year	(Recommended Sequence)		
	Humanities/Social Sciences or Literature	3	3
	Physics Electives (minimum required)	5	3
	Additional Physics Electives or Free Electives	9	9
		17	**15**
	Total credits:		**120**

Physics Electives

PHY 251, 252	Elementary Astrophysics I, II
PHY 300, 301	Undergraduate Seminar
PHY 313*	Mechanics
PHY 314*	Wave Motion
PHY 321*, 322*	Electronic Devices and Circuits
PHY 351, 352	Physics of the Environment
PHY 363	Intermediate Astrophysics
PHY 411*, 412*	Electric and Magnetic Fields I, II
PHY 421*, 422*	Advanced Physics Laboratory I, II
PHY 441	Statistical Thermodynamics
PHY 442	Elements of Solid State Physics
PHY 495	Independent Study
PHY 480	Undergraduate Research
PHY 490	Senior Thesis
PHY 531*	Intermediate Quantum Mechanics I

* Students who intend to continue their studies in physics at the graduate level should consult with their advisors. A typical course selection for students planning on attending graduate school is indicated above by a star after the course number.

* Other computer courses such as CIS 110 may substitute for ECE 191, but must be approved by advisor. Alternatively, if PHY 226 is offered, it takes the place of PHY 224 plus ECE 191. ECE 191 or its alternative is counted as part of the 45 required physics credits.

** Upper-division Laboratory requirement: a minimum of 6 credits must be selected from the laboratory courses PHY 321, 322, 421, 422 — included in total of minimum required physics electives.

*** Students must take a total of six credits of science or mathematics or engineering courses offered by the following departments: biology, chemistry, computer and information science, mathematics, civil engineering, electrical computer engineering or mechanical engineering. 200- or 300-level physics courses in the area of astrophysics are also eligible for fulfilling this requirement. The courses must be acceptable for credit to students majoring in the respective science or engineering departments, and be approved by the student's advisor.

Note: Of the 120 credits needed for a Bachelor of Science degree in physics, the department requires 45 credits in physics, 12 credits in specified courses in mathematics, and 6 credits in courses in a second science or mathematics or engineering. The recommended course sequence of required courses is given below. Of the 120 credits, 30 must be in the upper-division. Each student is required to consult with his or her advisor before registering for courses.

Physics Major
Materials Science Option

Recommended Courses

Materials science is a rapidly developing field that includes theoretical and experimental studies relating to solid state microelectronics, liquid crystals, superconductors, optical fibers, metallic alloys, ceramic materials, gravity-free processing, and other advanced applications.

		Semester Credits	
First Year		**First**	**Second**
EGR 107, 108	Intro. Engineering through Applied Sci. I, II	3	2
PHY 111 (or 113)	Physics for Science & Engineering I	4	
PHY 112 (or 114)	Physics for Science & Engineering II		4
MTH 113 (or 111)	Calculus for Applied Sci. and Engineering I	4	
MTH 114 (or 112)	Calculus for Applied Sci. and Engineering II		4
CHM 153	Modern/Applied Chem. for Sci./Engrg. I **OR**	3	
CHM 151, 161	Princ. Modern Chem. I / Applied Chem. I (4)		
CHM 154	Modern/Applied Chem. for Sci./Engrg. II **OR**		3
CHM 152, 162	Princ. Modern Chem. II / Applied Chem.II (4)		
ENL 101*, 102	Critical Writing and Reading I, II	3	3
		17	**16**
Second Year			
PHY 115*	Introduction to Classical Physics	3	
PHY 213*	Applied Modern Physics		3
PHY 225*, 226	Introductory Experimental Physics I, II	2	3
PHY 234*	Intermediate Mathematical Physics		3
MTH 211*	Analytic Geometry and Calculus III	4	
EGR 231*	Materials Science	3	
	Humanities/Social Science, or Literature Electives	3	6
		15	**15**
Third Year			
PHY 321, 322*	Electronic Devices and Circuits I, II	3	3
PHY 341, 342*	Modern Physics & Quantum Mech I, II	3	3
CHM 315, 316*	Physical Chemistry I, II	4	4
	Humanities/Social Science or Literature	6	3
	Free Elective		3
		16	**16**
Fourth Year			
PHY 441	Statistical Thermodynamics	3	
PHY 442	Elements of Solid State Physics		3
	Humanities/Social Science or Literature	3	3
	Free Electives	6	6
	Physics Electives***	3	3
		15	**15**
	Total credits:		**125**

* Required courses for materials science option

A minimum of 45 credits in physics are required for graduation.

Recommended Electives: Materials Science Option

CIS 111	Computer Programming (PASCAL)
CIS 260	FORTRAN
ECE 231	Electrical Material Science**
EGR 232	Engineering thermodynamics
PHY 313*	Mechanics
PHY 314*	Wave Motion
PHY 411, 412*	Electric/magnetic Fields I, II
MNE 471	Physical Metallurgy
PHY 531*	Intermediate Quantum Mechanics I
CHM 523	Thermodynamics

* Recommended for graduate-school bound students

** Requires a minimal knowledge of circuit theory — PHY 321 is sufficient

Humanities, Literature, and Social Science Requirements for Physics Majors (both options)

Literature—6 credits
Literature in English, literature in a foreign language, or foreign literature in translation.

Humanities/Social Science—18 credits
From the areas of Humanities and Social Sciences below, with a minimum of six credits from each area:

Humanities: History, Philosophy (including logic); Art and Music (Excluding applied courses), and Foreign Language (excluding literature).

Social Science: Economics, Political Science, Psychology, and Sociology.

Women's Studies courses receive either social science or humanities credit, depending on the discipline of the course with which they are cross-listed.

Physics Minors

In the course of their studies, many UMass Dartmouth students acquire a background in basic physics and mathematics which enables them to take upper division physics courses. A number of these students may elect to extend their study of physics into more advanced areas. A major goal of our two physics minors is to provide encouragement and formal recognition for these students.

The Physics Minor has the additional goal of establishing the physics background needed to enter interdisciplinary fields which have a significant physics content. This would be particularly useful for students majoring in fields such as Chemistry, Mathematics, Engineering, and Computer Science. Students considering a career in fields such as Biophysics or Medical Physics would benefit from a minor in physics.

The Environmental Physics Minor focuses specifically on the physics background needed to enter interdisciplinary environmental fields which have a significant physics content.

Students who wish to enter either program must obtain approval of the Physics Department chairperson, preferably before enrolling in upper-division courses. Students who adopt one of the Physics minors must meet the university requirements of cumulative grade point averages and total number of credits. In addition, the Physics Department requires that the cumulative grade point average in physics courses submitted for recognition of completion of a minor in physics be 2.0 or above.

Physics

Requirements

		credits
PHY 113	Classical Physics I	4
PHY 114	Classical Physics II	4
PHY 213	Applied Modern Physics **OR**	3
PHY 115	Intro. to Classical Physics	3

An additional nine credits selected from the following upper division courses:

PHY 300	Undergraduate Seminar	9
PHY 313	Mechanics	
PHY 314	Wave Motion	
PHY 341, 342	Modern Physics and Quantum Mechanics I, II	
PHY 351, 352	Environmental Physics I, II	
PHY 363	Intermediate Astrophysics	
PHY 411, 412	Electric & Magnetic Fields I, II	
PHY 441	Statistical Thermodynamics	
PHY 442	Elements of Solid State Physics	
PHY 531	Intermediate Quantum Mech. I	

Total 20

Notes: Physics Minor

Certain other graduate courses may be substituted for the listed upper division courses, with the approval of the Physics Department.

A student wishing to minor in Physics must also acquire a substantial background in calculus (MTH 111, 112, and 211 or equivalent are required).

Environmental Physics

Requirements

		credits
PHY 113	Classical Physics I **OR**	3 or 4
PHY 101	Introduction to Physics I	
PHY 114	Classical Physics II **OR**	3 or 4
PHY 102	Introduction to Physics II	
PHY 351	Physics of the Environment I	3
PHY 352	Physics of the Environment II	3
PHY	One 300/400 Physics elective with an environmental theme*	3
PHY	One other Physics environmental elective**	3

Total 18-20

Notes: Environmental Physics Minor

* Fundamentals of Physical Oceanography is an example.

** Environmentally related courses include PHY 162, 163, 171, 172, and 182.

PHY 030 three administrative credits*
START Science I

A laboratory based course which develops scientific reasoning skills by the study of basic physical concepts. Students study properties of matter (mass, volume, density, etc.). This course is for students accepted to the university into the special START Program. (Formerly STR 030, fall semester.)

PHY 101 three credits **S**
Introduction to Physics I
Pre- or Corequisite: MTH 101 recommended

An introductory course in physics covering mechanics, heat and thermodynamics. Emphasis is on fundamentals and their application to practical problems. Non-calculus presentation.

PHY 102 three credits **S**
Introduction to Physics II
Pre- or Corequisite: MTH 102 recommended

Continuation of PHY 101. The topics covered include vibrations, sound, optics, electricity and magnetism. Non-calculus presentation.

PHY 103 one credit **S**
General Physics Laboratory I
2 hours laboratory

A laboratory course that accompanies PHY 101. An introduction to experimental techniques. Experiments in mechanics.

PHY 104 one credit **S**
General Physics Laboratory II
2 hours laboratory

A laboratory course that accompanies PHY 102 or PHY 108. Experiments in optics, electricity and modern physics using electrical measurement techniques.

PHY 107 three credits **S**
Basic Physics I

An introductory course in physics covering mechanics, wave motion and heat. Emphasis is on principles, applications and the development of problem-solving ability. Non-calculus presentation.

*
Administrative credits do not count toward the total required for graduation.

Gen Ed note: Physics courses satisfy the Natural Science and Technology requirement. Those marked **S** below are appropriate for non-science/engineering majors.
G Global Awareness
O Oral Skills

PHY 108 three credits **S**
Basic Physics II
Prerequisite: PHY 107

Continuation of PHY 107. The study of electricity and magnetism, optics, atomic and nuclear physics. Non-calculus presentation.

PHY 109 two credits
Freshman Seminar I
2 hours weekly

Seminar series on topics of current interest to physicists.

PHY 110 one credit
Freshman Seminar II

Continuation of PHY 109.

PHY 111 four credits
Physics for Science and Engineering I
4 hours lecture
Corequisite: MTH 113, EGR 107

A calculus-based introduction to the concepts of classical mechanics. The course is taught in an active learning mode in a computerized physics studio. Topics include one and two dimensional motion, dynamics, conservation of energy and momentum, rotational motion and angular momentum. Covers the same topics as PHY 113 in an integrated instructional mode.

PHY 112 four credits
Physics for Science and Engineering II
4 hours lecture
Prerequisite: PHY 111 or PHY 113
Corequisite: MTH 114, EGR 108

A calculus-based introduction to the concepts of thermodynamics and electricity and magnetism. The course is taught in an active learning mode in a computerized physics studio. Topics include the first and second laws of thermodynamics, electric fields, flux, electric potential, elementary DC and AC circuits and magnetic fields. Covers the same topics as PHY 114 in an integrated instructional mode.

PHY 113 four credits **O**
Classical Physics I
Includes 2-hour weekly laboratory
Prerequisite: MTH 111

A calculus based introduction to classical mechanics emphasizing problem solving. Topics include particle kinematics and dynamics, concepts of work, energy and momentum, rotational motion and oscillations.

PHY 114 four credits **O**
Classical Physics II
Includes 2-hour weekly laboratory
Prerequisite: MTH 112

Continuation of PHY 113. Study of electric and magnetic fields, electric potential, capacitance and inductance, elementary circuits, electromagnetic oscillations, and optics.

PHY 115 three credits **S**
Introduction to Classical Physics

This course treats topics in classical physics from the areas of waves, optics, and thermodynamics.

PHY 130 three credits **S**
START Science II
Prerequisite: PHY 030 (STR 030)

A laboratory based course which develops scientific reasoning skills by the study of basic physical concepts, continuing from STR 030. Students study properties of motion (position, velocity, acceleration, etc.). This course is for students accepted to the university into the special START Program. (Formerly STR 130, spring semester.)

PHY 151 three credits **S**
Introductory Astronomy

An introduction to astronomy that surveys the content, structure, and scale of the cosmos as it is presently known. Properties of the solar system, the sun and stars, exotic objects such as pulsars and black holes, galaxies, quasars, and the universe as a whole are discussed. Each semester a different topic of current interest in astronomical research will also be covered. Evening observing sessions will be arranged.

PHY 161 three credits **S**
Science, Technology, and Society I

Interaction of science and technology with the individual and contemporary society. Non-mathematical presentation and in-depth study, during each term, of a major development in science, considered in its historical and social contexts.

PHY 162 three credits **S, G**
Science, Technology, and Society II: The Environment

This course studies current environmental issues and their relations to technological choices. For example, air and water quality are examined in relation to the use of various renewable and non-renewable energy resources. The course is non-mathematical and satisfies 3 credits of the Natural Science requirement.

PHY 163 three credits **S**
Energy and Energy Alternatives

A non-mathematical yet quantitative survey of contemporary energy questions. Energy sources such as coal, oil, natural gas, solar energy, and wind power are examined. Energy conservation techniques are examined in detail.

PHY 171 three credits **S**
Planet Earth and its Resources I

Origin and history of earth; composition and structure of its interior, crust, oceans, and atmosphere. Plate tectonics and sea floor spreading; seismology, vulcanism and earthquakes; magnetism of earth. Forces shaping earth's surface, faults and folds, erosion, sedimentation and weathering. Earth materials: soil, minerals and ores, igneous, sedimentary, and metamorphic materials. Earth resources: salts and fertilizers, chemical supplies, and building materials.

PHY 172 three credits **S**
Planet Earth and its Resources II

Earth resources: rare and abundant metals and their uses, history of life on earth, the fossil record. Energy and fossil fuels. Nuclear energy sources, uranium, plutonium, and deuterium. Water and its distribution, rate of use, and pollution. Atmospheric-oceanic circulation and heat balance. Weather and climate. Humanity as agent of change on planet Earth. Outlook on future.

PHY 180 three credits **S**
Scientific and Social Aspects of Solar Energy

The development of solar energy in the U.S. Individual sources both direct and indirect (biomass, wind, etc.) are examined as to current state of the art and future potential. Different development schemes such as centralized or distributed modes are

considered. The goal of the inquiry will be to determine the optimum paths for future development.

PHY 182 three credits **S**
Introduction to the Weather

The fundamentals of atmospheric science. Basic physical principles which affect the general circulation of the atmosphere and their relation to the day-to-day sequence of weather events are discussed. As part of the course, students generate short-term forecasts using real time information available by computer from the internet.

PHY 213 three credits
Applied Modern Physics
4 classroom hours weekly
Prerequisite: PHY 114

A first course in modern physics designed for engineering and physics students. It deals with basic atomic and nuclear physics and emphasizes the applied areas of modern physics that are likely to be of use in practical engineering applications.

PHY 225 two credits
Introductory Experimental Physics I
1 hour lecture, 3 hours laboratory

Introduction to techniques, equipment and data analysis in experimental physics. Develops skills in the use of instruments such as the oscilloscope and multimeter; error estimation and propagation; data analysis using computer spreadsheets; and laboratory notetaking and reporting. The lectures introduce the theory of error analysis, interpretation of experimental data and scientific ethics.

PHY 226 three credits
Introductory Experimental Physics II (long version)
2 hours lecture, 3 hours laboratory
Prerequisite: PHY 225 or permission of instructor

Continuation of PHY 225. The lecture portion introduces the computer as a tool in physics for acquiring, analyzing and displaying experimental data, and computers are used for solving differential equations and simulating dynamical problems.

PHY 227 one credit
Introductory Experimental Physics II (short version)
3 hours laboratory
Prerequisite: PHY 225 or permission of instructor

Continuation of PHY 225.

PHY 234 three credits
Intermediate Mathematical Physics
3 hours weekly
Prerequisites: PHY 114, MTH 211

The development of the mathematical and computational tools needed for solving more advanced physics problems. Topics are selected primarily from classical mechanics and electricity and magnetism.

PHY 251 three credits
Elementary Astrophysics I
Prerequisite: One year of science or mathematics or permission of instructor

Basic concepts and modern developments in astrophysics at an elementary level. It can be used to fulfill the science requirement. Subjects to be discussed range from the solar system and the structure and evolution of the stars to galaxies and the expanding universe. Observing techniques are also taught using the observatory telescope.

PHY 252 three credits
Elementary Astrophysics II
Prerequisite: PHY 251 or permission of instructor

A continuation of PHY 251, this course consists of a more detailed analysis of subjects introduced the preceding semester. Among the topics to be considered are cosmology and high-energy astrophysics including pulsars, quasars and black holes. More advanced observing techniques are introduced, including astrophotography and electronic imaging.

PHY 261 three credits **S**
Physics of Music: Waves, Wiggles, and Music

The science behind how musical instruments work, with hands-on activities and demonstration. No mathematics beyond simple algebra will be used. Topics include simple vibrators; waves on strings and in other structures; scales, temperaments, and harmony; acoustical environments: production and perception of musical tones. Previous musical experience is helpful.

PHY 271 three credits **S**
The Solar System: Exploring the Planets
3 hours lecture
Prerequisite: PHY 171

An introduction to the physical nature of the solar system. The characteristics of the planets and major satellites will be examined using lecture and World Wide Web sites. Topics will include compositions, internal structures, atmospheres, possibilities for biological activity and the development of geologic surface features. The presentation is non-mathematical and will introduce the use of the observatory and basic astrophotography.

PHY 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see section of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

PHY 300, 301 three credits each
Undergraduate Seminar I, II

A seminar conducted at the sophomore-junior level on topics in contemporary physics, astrophysics and related topics.

PHY 313 three credits
Mechanics
Prerequisites: PHY 234, MTH 211

Mechanics of particle systems including central force motion and two body scattering, accelerating coordinate systems, rigid body kinematics and dynamics, coupled oscillators, small vibrations and normal modes, introduction to Lagrangian methods.

PHY 314 three credits
Wave Motion
Prerequisites: PHY 234, MTH 211

Wave phenomena in mechanics, optics and acoustics. A study of the wave equation and its applications with emphasis on the general properties of waves. Interference, diffraction, reflection, refraction and polarization.

PHY 321 three credits
Electronic Devices and Circuits I
2 hours lecture, 3 hours laboratory
Prerequisites: PHY 114, MTH 211

A lecture and laboratory course in electronic circuit theory covering both active and passive devices and elementary networks.

PHY 322 three credits
Electronic Devices and Circuits II
2 hours lecture, 3 hours laboratory
Prerequisite: PHY 321

A continuation of PHY 321 with emphasis on applications using the elements and techniques of modern research, including integrated-circuit devices, digital circuits, and computer interfacing.

PHY 341 three credits
Modern Physics and Quantum Mechanics I
Prerequisite: PHY 213

Experimental evidence leading to the development of modern physics, Bohr-Sommerfeld theory of the hydrogen atom. Special relativity, introduction to the Schroedinger equation with solutions to simple problems leading to the study of one electron atoms. Electron spin, magnetic moment, and the fine structure in hydrogen spectra.

PHY 342 three credits
Modern Physics and Quantum Mechanics II
Prerequisite: PHY 341

Continuation of PHY 341. Further applications of the principles of quantum mechanics with applications to many particle systems. Quantum statistics, atomic spectra of many electron atoms, nuclear structure, nuclear models and scattering.

PHY 351 three credits
Physics of the Environment I
Prerequisites: A one year course in physics and MTH 101 or 131

A course applying scientific concepts and simple mathematical modeling (noncalculus) to environmental problems. Major topics addressed include the cycling of various substances (water, carbon, sulfur, etc.) in the natural environment and effects of anthrogenic perturbations on them.

PHY 352 three credits
Physics of the Environment II
Prerequisite: PHY 351

Continuation of PHY 351. Acid rain, climatology and the "greenhouse effect" Survival of populations. More elaborate mathematical modelling, some of which involves a little calculus, but a knowledge of calculus is not a prerequisite.

PHY 363 three credits
Intermediate Astrophysics
Prerequisites: PHY 251, 252; or permission of instructor.

This course explores in greater detail topics in stellar and galactic astronomy that were introduced in PHY 251-252. Variable stars, binary stars, star clusters, and galactic structure will be discussed with an emphasis on areas of current astronomical research. Astronomical imaging and image-processing techniques will be taught using equipment at the observatory.

PHY 411 three credits
Electric and Magnetic Fields I
Prerequisite: PHY 234

Study of the fields of static charges and constant currents, the properties of dielectric and magnetic materials, and magnetic induction leading to the formulation of Maxwell's equations.

PHY 412 three credits
Electric and Magnetic Fields II
Prerequisite: PHY 411

Continuation of PHY 411. Development of the wave equation. Electro-magnetic waves in space and in matter. Study of radiation from time varying charge and current distributions.

PHY 421 three credits
Advanced Physics Laboratory I
1 hour lecture, 4 hours laboratory
Prerequisites: PHY 213, 226

Laboratory course to acquaint students with current experimental techniques in physics and methods of data analysis.

PHY 422 three credits
Advanced Physics Laboratory II
1 hour lecture, 4 hours laboratory
Prerequisite: PHY 421

A continuation of PHY 421. Projects in experimental physics with emphasis on independent work by the student.

PHY 430 three credits
Methods and Strategies for Physics Teachers
Prerequisites: PHY 113, 114, 213, 234

This course is designed for Physics teachers. It emphasizes the use of varied teaching strategies and methods to cater to different learning styles of students. Attention is given to analytic and graphic as well as intuitive presentation of physics concepts and phenomena. Teaching techniques including audio-visual aids, demonstration and hand-on experiments are used to enhance the learning experience.

PHY 441 three credits
Statistical Thermodynamics
Prerequisite: PHY 213

The laws of thermodynamics and their interpretation based on the microscopic behavior of matter. Entropy and probability, equilibrium, reversibility, thermodynamic functions, phase changes, quantum statistics, Applications to problems in solid state physics.

PHY 442 three credits
Elements of Solid State Physics
Prerequisite: PHY 342

Basic concepts of condensed matter physics, crystal structure, crystal diffraction, lattice vibrations, theory of metals, semiconductors and insulators, magnetic properties of solids.

PHY 480 three credits
Undergraduate Research
Prerequisite: Permission of department

Individual work under the supervision of a faculty member on an experimental, theoretical, or literature review project in physics. This work may lead to a senior thesis project or may be concluded by a written report at the end of the term.

Note: 500-level courses are for graduate students and advanced undergraduates. 600-level courses are for graduate students only. See the *Graduate Catalogue* for graduate general and program requirements.

Graduate Courses in Physics

PHY 490 three credits
Senior Thesis

Intensive individual work on an experimental or theoretical problem in physics under the guidance of a faculty member. The special project is to be selected at the beginning of the senior year. Credit will be assigned in the second semester.

PHY 495 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Individual study of selected topics in physics under the guidance of a faculty advisor. This course is suitable for study of physics subfields of special interest to individual students and faculty members.

Conditions and hours to be arranged.

PHY 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

PHY 501 three credits
Graduate Laboratory I

Principles of electronics and electronic instrumentation. Recommended for students with little or no prior experience in electronics.

PHY 502 three credits
Graduate Laboratory II

Continuation of PHY 501. Introduction to experimentation in physics. Recommended for students with little prior experience in conducting experiments, especially those who wish to enter into experimental research projects. Emphasis is on advanced topics and methods of data analysis.

PHY 510 three credits
Special Topics in Physics
Prerequisites: Variable, depending on topic

An advanced treatment of a special topic in physicsor Oceanography with an emphasis on recent developments. The subject matter varies according tho the interests of the instructor and the students.

PHY 531 three credits
Quantum Mechanics I

Fundamentals of quantum mechanics. Schrödinger equation, operator techniques, angular momentum, central force motion, spin, matrix representations, and elementary perturbation theory are studied.

PHY 543 three credits
Statistical Thermodynamics

The laws of thermodynamics and their interpretation based on the microscopic behavior of matter. Entropy and probability, equilibrium, reversibility, thermodynamic functions, phase changes, quantum statistics are studied. Applications to problems in solid state physics are examined. (Formerly PHY 441.)

PHY 550 three credits
Fundamentals of Physical Oceanography
Prerequisite: Differential and integral calculus or permission of instructor

Fundamental physical oceanographic processes important to coastal and open ocean environments. Included in the course will be lectures given by current workers involved in ongoing research on specialized topics such as satellite oceanography and numerical modeling.

PHY 611 three credits
Electromagnetic Theory I

Boundary value problems in electrostatics, Green's functions and eigenfunction expansions. Also examined are Maxwell's equations, momentum and energy of the electromagnetic field, radiation, multipole expansions, scattering, special relativity and Lagrangian formulation, radiation from moving charge, radiation reaction. (Formerly PHY 522.)

PHY 612 three credits
Electromagnetic Theory II
Prerequisite: PHY 611 or equivalent

Study of simple radiating systems, scattering and diffraction of electromagnetic waves, radiation by moving charges, special theory of relativity, Lorentz transformation, covariant formulation of Maxwell's equations, relativistic particle dynamics, scattering of charged particles, radiation damping and self-fields of a charged particle.

PHY 615 three credits
Theoretical Mechanics and Relativity

The Lagrangian and Hamiltonian formulation of Newtonian mechanics. Also covered are variational principles, transformation theory, Poisson brackets, Hamilton-Jacobi theory, special relativity and the covariant formulation of particle mechanics. General relativity is introduced. (Formerly PHY 521.)

PHY 616 three credits
Graduate Seminar

A seminar devoted to the discussion of topics in modern physics and related subjects. (Formerly PHY 575.)

PHY 621 three credits
Advanced Mathematical Physics I

Mathematical methods in physics. Linear algebra, complex variable theory, eigenfunction expansions and orthogonal functions, the special functions of mathematical physics are studied. (Formerly PHY 511.)

PHY 622 three credits
Advanced Mathematical Physics II

Continuation of PHY 621. Partial differential equations, integral equations, Green's functions, generalized functions, calculus of variations, and group theory are studied. (Formerly PHY 512.)

PHY 631 three credits
Quantum Mechanics II

Radiative processes and the theory of scattering. Other topics included are variational principles, symmetry and invariance principles, and second quantization. Relativistic quantum mechanics and field theory are introduced. (Formerly PHY 532.)

PHY 632 three credits
Advanced Quantum Mechanics

Further training for students in theoretical physics on a graduate level. Explores in depth topics discussed in PHY 531 and PHY 631. (Formerly PHY 533.)

PHY 635 three credits
Solid State Physics I

Basic concepts of solid state physics, including crystal structures, lattice vibrations and ionic crystals. Also examined are dielectric and optical properties of insulators, ferroelectrics, free electron theory of metals, energy bands, and semiconductors. (Formerly PHY 541.)

PHY 636 three credits
Solid State Physics II

Theory of conductivity and related effects. Rectification and transistors, imperfection in crystals, plastic deformation color centers, optical properties of solids, and theory of magnetism are also studied. (Formerly PHY 542.)

PHY 641 three credits
Statistical Mechanics
Prerequisite: PHY 213

Thermodynamics and its statistical interpretation. Canonical, micro-canonical, and grand canonical ensembles. Boltzmann, Fermi, and Bose distributions, and their applications to equilibrium and transport phenomena. Phase equilibrium is also studied.

PHY 651 three credits
Nuclear Physics

Structure and properties of nuclei. Also studied are nuclear forces and potentials, nuclear shell model and collective model, strong, electromagnetic, and weak interactions, nuclear reactions and decays. (Formerly PHY 551.)

PHY 652 three credits
Elementary Particle Physics

Relativistic kinematics of particle motion, phenomenological and dynamical theories of particle interactions and classification of particles according to symmetry principles. (Formerly PHY 552.)

PHY 661 three credits
Physical Oceanography of Shallow Seas
Prerequisite: PHY 550 or permission of instructor

Physical oceanographic processes important to European and U. S. shallow seas, continental shelves and banks and their relationship to nutrients and biology (plankton and fish) in these regions. Included in the course will be 2-3 guest lectures given by current workers involved in ongoing research.

PHY 662 three credits
Physical Oceanography of Enclosed Basins
Prerequisite: PHY 550 or permission of instructor

Physical oceanographic processes important to enclosed basins and their relationship to nutrients and biology (plankton and fish) in these regions. Regions of study will include the Gulf of Maine, Gulf of Mexico and Mediterranean Sea. In the course will be 2-3 guest lectures given by current workers involved in ongoing research.

PHY 680 three credits
Graduate Research

Directed research on a project in experimental, theoretical, or applied physics under the supervision of a faculty sponsor. The research may lead to a graduate thesis project or may be concluded by a written report at the end of one or two terms. Graded A-F. (Formerly PHY 580.)

PHY 690 not to exceed 6 credits
Graduate Thesis

Thesis research on an experimental or theoretical project in physics under a thesis advisor. Project will usually be selected at the beginning of the second year of graduate study. Submission of a formal thesis required at conclusion. Graded A-F. (Formerly PHY 590.)

PHY 695 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged. (Formerly PHY 595.)

PHY 696 three credits
Directed Study
Prerequisites: Permission of the instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged. (Formerly PHY 596.)

Textile Sciences

The textile industry in the United States depends upon the quality of the technical and managerial leadership attracted to the industry. The technological, chemical, and marketing advances of the industry in recent years have opened the door to many career opportunities.

Textiles also provide a unique opportunity for those who seek a lucrative profession. Today's modern textile industry is remarkably diversified, comprising a world where one can develop individual talent and specialize in aspects of manufacturing, chemistry, marketing, management, styling, and design.

Textiles have their application in every conceivable field of modern day living from the products we wear, to industry, the environment, medicine, and explorations in space and the oceans.

Government and industry continue to have tremendous need for those who are educated in the textile sciences. The opportunities for the graduating student present a challenging, exciting, and very rewarding future. More than ever, the industry relies on well-educated textile graduates to continue its manufacturing excellence, capabilities in developing innovative new products, and competitiveness in a high-tech, global market. The curriculum at UMass Dartmouth aims to educate its students to meet these challenges and contribute to the industry's future.

Students enrolled in Textile Sciences who have an interest in fashion, buying, or merchandising that extends beyond the course offerings at UMass Dartmouth are eligible to become "visiting students" at the Fashion Institute of Technology. Students are responsible for tuition and other costs assessed by the Fashion Institute of Technology.

Through a special student exchange program with the University of Rhode Island, students may spend one or two semesters in the Department of Textiles, Fashion Merchandising, and Design. Possible coursework includes fashion retailing, fashion buying, textile marketing, textile history, fashion history, apparel design, apparel production, and clothing and human behavior.

Those students interested in textile design may also be interested in the Textile Design/Fiber Arts major, which is offered through the College of Visual and Performing Arts.

The Textile Sciences Department awards a number of industry-sponsored scholarships every year, considering both need and academics.

Textile programs qualify under the New England Regional Student Program to allow non-resident students from the other New England states to pay a reduced non-resident tuition.

The Textile Sciences Building has approximately 15,000 square feet of laboratory space devoted to research and education, with equipment for the processing of yarn from the raw material and the conversion of these yarns into various textile structures from wovens and knits to composites and specialty products.

Equipment is also available for dyeing small lots of fibers, yarns, and fabrics both atmospherically and under pressure. A variety of chemical finishes can be applied to fabrics to produce various functional properties. Students gain experience with most wet finishing operations and evaluating performance properties during each processing stage.

Faculty and Fields of Interest

Qinguo Fan textile chemistry, chemical analysis, wastewater treatment, color science, dye chemistry

Yong Ku Kim fiber physics, composites, computer applications, fiber materials and structures

Kenneth Langley microscopy, statistics, yarn processing, natural fibers

Armand F. Lewis dyeing, printing material sciences, polymer chemistry, composites, environmental sciences

Samuel C. Ugbolue polymer, fiber, and textile science, yarn manufacture, knitting and clothing engineering

Roger Warburton apparel manufacturing, MIS systems, statistics, software cost estimation

Steven B. Warner fiber, polymer, material science, nonwovens, composites, microscopy, thermal analysis

Alton R. Wilson (interim chairperson) design, nonwovens, testing, weaving

Department Policy Statements

1.
Upper-division students with at least a 2.5 grade point average may, upon approval of the department chairperson, earn up to 3 credits in Contract Learning, which may be applied to fulfill a free or a textile elective.

2.
Students must consult with their academic advisor prior to registering for any classes. Transfer students should be aware of possible scheduling problems due to the sequential nature of the Department's curricula, that may cause a delay in meeting graduation requirements. Transfer students are therefore especially encouraged to meet with their academic advisor early in order to satisfy prior-year requirements as soon as possible. In any case, final responsibility for keeping pace with the curriculum and taking required courses in sequence rests with each student.

General Distribution Requirements

All students in the Department of Textile Sciences are required to take a minimum of 9 credits in the humanities and 9 credits in the social sciences. For majors in Textile Science, General Option, ENL 265 Business Communications counts as a humanities course and ECO 231, 232 Principles of Micro/Macroeconomics I, II count as social science courses.

Textile Science
BS Degree

General Option

This program of study offers a unique blend of courses in the textile sciences, manufacturing, and management. The program also enhances the student's knowledge of timely environmental issues and the linking of science and management principles to address the technological objectives of industry. This innovative program is the result of extensive consultation with industry representatives and is designed to prepare students for a broad selection of careers.

The courses in Business Information Systems, Accounting, Management, and Marketing and Economics comprise a special version of the *Business Administration Minor* offered by the College of Business. Students' transcripts will display the Textile Science major and a Business Administration minor. This minor is required for completion of the Textile Science major.

Requirements

		Semester Credits	
		First	**Second**
First Year			
ENL 101, 102	Critical Writing and Reading I, II	3	3
MTH 101, 102	Elements of College Math I, II	3	3
BIS 101	The Business Organization	3	
TES 105	Contemporary Issues in Textile Science	3	
TES 110	Environmental Science and Business		3
	Electives	3	6
		15	**15**
Second Year			
ACT 211, 212	Accounting I, II	3	3
TES 201	Fiber Materials		3
ECO 231, 232	Principles Micro/Macroeconomics	3	3
MGT 210	Business Statistics I	3	
MKT 211	Principles of Marketing	3	
ENL 265	Business Communications		3
TES 252	Textile Seminar	1	
	Electives	3	3
		16	**15**
Third Year			
TES 300	Fabric Design and Structure	3	
TES 301, 302	Textile Manufacturing I, II	3	3
TES 303, 304	Dyeing, Printing, and Finishing I, II	3	3
TES 305	Textile Testing		3
TES 310	Statistical Quality Control	3	
TES 311	Process Optimization		3
FIN 312	Business Finance		3
BIS 315	Information Systems	3	
MGT 311	Organizational Behavior		3
		15	**18**
Fourth Year			
TES 401	Textile Manufacturing III	3	
TES 402	Advanced Materials and Composites		3
MGT 333	Quantitative Business Analysis	3	
MGT 346	Operations Management for Manufacturing		3
TES 410	Manufacturing Facilities Design	3	
TES 411	Managing Technology **OR**		3
MGT 463	Management of Technology		
TES 463	Senior Project (Research Experience/ Structured Internship)	3	
	Elective / Textile Elective	3	3
		15	**12**
	Total Credits:		**121**

Textile Science
BS Degree

Applied Fiber Materials Option

This option emphasizes science and engineering principles and how these interact with processing and high-performance textile structures, for students who are more inclined towards careers in product development, industrial engineering, or research, rather than in management.

New freshman students will be considered for this option during an initial advising session before the beginning of their first semester. Admissions will look for a secondary school background in mathematics and science similar to that expected for admission to study in biology, engineering, medical laboratory science, and nursing.

Requirements

		Semester Credits	
		First	**Second**
First Year			
TES 105	Contemporary Issues in Textile Science	3	
TES 201	Fiber Materials		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
CHM 151, 152	Principles of Modern Chemistry I, II	3	3
CHM 161, 162	Introduction to Applied Chemistry I, II	1	1
MTH 111, 112	Analytic Geometry and Calculus I, II	4	4
	Electives	3	3
		17	**17**
Second Year			
TES 252	Textile Seminar	1	
TES 350	Environmental Science & Indr. Compliance	3	
TES 301, 302	Textile Manufacturing I, II	3	3
EGR 231	Materials Science	3	
EGR 221	Materials Science Laboratory	1	
PHY 107	Basic Physics I	3	
PHY 103	General Physics Laboratory I	1	
MGT 210, 211	Business Statistics I, II	3	3
ENL 266	Technical Communication		3
MTH 211	Analytic Geometry and Calculus III		3
	Elective		3
		18	**15**
Third Year			
TES 310	Statistical Quality Control	3	
TES 300	Fabric Design and Structure	3	
TES 303, 304	Dyeing, Printing, and Finishing I, II	3	3
TES 305	Textile Testing	3	
EGR 232	Thermodynamics	3	
EGR 241	Engineering Mechanics I: Statics	3	
	Electives	3	6
		15	**15**
Fourth Year			
TES 403	Mechanics of Textile Structures	3	
TES 410	Manufacturing Facilities Design	3	
TES 401	Textile Manufacturing III	3	
TES 407	Fiber Reinforced Polymeric Materials	3	
TES 402	Advanced Materials and Composites		3
TES 463	Senior Project (Research Experience/ Structured Internship)		3
TES 411	Managing Technology **OR**		3
MGT 463	Management of Technology		
TES 406	Computer Applications in Textiles		3
		12	**12**
	Total Credits:		**121**

Textile Science Courses

Gen Ed key

S Natural Science and Technology
O Oral Skills

Between 1993 and Spring 1998, courses in this area were offered under the prefix MMT.

TES 105 three credits **S**
Contemporary Issues in Textile Sciences

A student-centered, discovery-oriented, laboratory-based science course dealing with fundamentals and basic quantitative aspects of textile sciences and the textile industry. Emphasis is placed on the fundamentals of fibers, yarns, and fabrics, their properties, usage, quality aspects and relationship to the finished product. Flowcharts are used to describe the various textile processes and specific products are selected and dissected. Federal legislation and relevant international trade agreements as the relate to textile are considered. Students will learn about various opportunities within the textile industry and will visit textile plants/facilities.

TES 110 three credits **S**
Environmental Science and Business

Physical sciences and technologies for business persons to deal intelligently with their responsibility of protecting the environment. Fundamental scientific principles are discussed in the context of the geology of groundwater, soil contamination and its remediation, use/safe handling and disposal of hazardous industrial chemicals/wastes and industrial air pollution and its control. OSHA-regulated issues like toxic materials use and in-plant noise pollution are also discussed.

TES 201 three credits **S**
Fiber Materials
Prerequisite: Sophomore standing

The molecular structures and morphologies of fibers. A foundation is provided for understanding the physical, chemical and mechanical properties and behavior of fibrous structures. Production processes and applications are also examined.

TES 252 one credit
Textile Seminar

Discussions and presentations on textile materials, processes and products. Students learn to interrelate knowledge from all areas of textile - fibers, yarns, fabrics, dyeing, finishing, and end products and gain an understanding of the continuity from course to course in the Textile Science Program.

TES 262 three credits **S**
Microscopy

Various microscopic techniques in fiber identification and structure, composition of blends, physical, chemical, and biological conditions of fibers and yarns. Students are taught the principles of various microscopic and photomicroscopic techniques—scanning electron, optical, polarized light, atomic force, and so on—as well as introduced to the principles of image analysis. (Formerly TET 462.)

TES 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

TES 300 three credits
Fabric Design and Structure I
Prerequisite: upper-division standing

A study of the interaction of basic designs and processing dynamics on the aesthetic, physical and functional properties of fabric structures.

TES 301 three credits
Textile Manufacturing I
Prerequisite: upper-division standing

An examination of current and emerging systems employed in conversion of fibers into textile yarn structures. The relationships between material/process constraints and product functional quality are analyzed.

TES 302 three credits
Textile Manufacturing II
Prerequisite: TES 301

The principles of engineering and manufacture of fibrous structures by the process of knitting. Machine and motion capabilities and applicable mathematics are studied. The analysis and creation of fabric design and patterns are also considered.

TES 303 three credits **S**
Dyeing, Printing and Finishing I
Prerequisite: TES 201

The principles of dyeing, printing, and finishing of textile materials. Basic characteristics of dyes, chemical structure of dyes and fibers, detergent and scouring, classification of dyes and fibers, color and chemical composition are studied. Dyeing equipment and the specific dyes and procedures used to dye textiles are also examined.

TES 304 three credits
Dyeing, Printing and Finishing II
Prerequisite: TES 303

The principles of printing textile materials with dyes and pigments using the various commercial types of printing equipment. The finishing of textile materials using both chemical and mechanical techniques and the functional and aesthetic properties of fabrics will be discussed. Permanent press, softeners, water repellents, fire-retardant and other chemical and mechanical treatments will be reviewed.

TES 305 three credits
Textile Testing
Prerequisite: spring semester junior standing

Determination of raw material, and manufactured textile product conformance to specifications, and process/product evaluation by physical, chemical and microscopic methods. Standard test methods of industrial laboratories are employed. Laboratory test reports are generated by students from the data collection and analysis.

TES 310 three credits
Statistical Quality Control
Prerequisite: TES 210

The vision of never-ending improvement in quality. Statistical quality control charts are developed for implementing and maintaining economic control of processes. Diagnostic techniques for determining faults are explored.

TES 311 three credits
Process Optimization
Prerequisite: TES 310

The process of moving from the control stage to continuous improvement. Using computer workshops and the experimental methods developed by Taguchi and Box, opportunities are identified for finding and sustaining breakthroughs in improved quality.

TES 312 three credits
Fabric Design and Structure II
Prerequisite: TES 300 or permission of instructor

Advanced woven fabric design and structural analysis pertaining to compound fabric

structures involving extra warp and/or weft systems, layered fabrics, and leno constructed fabrics. The student is expected to understand and develop commercially viable complex fabric. All students will learn how to apply computer design software for proper woven structure layout and development.

TES 331 three credits
Textile Technology

A course designed for Textile Design students that covers the theory and procedures employed in the processing of raw materials into yarns and fabrics, including natural and manufactured fibers.

TES 350 three credits **E**
Environmental Science and Industry Compliance

A study of environmental science, technology, and compliance issues relevant to modern industrial manufacturing practice. The applied science of environmental pollution remediation technology is reviewed in the context of laws, regulations, and ethics. Issues of importance to the textile, chemical product, and related manufacturing industries will be emphasized.

TES 352 three credits
Seminar

A program designed to improve oral communication skills by learning and using concepts in textile sciences. Students will attend seminars presented by outside speakers, faculty, and graduate students and then each student will prepare a seminar for the class.

TES 401 three credits
Textile Manufacturing III
Prerequisite: TES 301

The sequential processes employed in the conversion of textile yarns into woven fabric. The course will focus on the interaction of processing conditions, both from traditional and advanced technologies, on woven fabric quality. Consideration is also given to dedicated information systems.

TES 402 three credits
Advanced Materials and Composites
Prerequisites: TES 302, 401

Processes used for producing functionally-advanced fibrous materials: non-woven fabrics bonded by mechanical, chemical or thermal techniques; spunbonded, spunlaced and meltblown systems. Braided and knotted structures, fabric coating systems, assemblage of fabrics by stitching, chemical and high radio frequency bonding, and advanced composite materials are considered.

TES 403 three credits
Mechanics of Textile Structures
Prerequisite: senior standing in applied fibers option

Study of the basic mechanics of fibrous assemblies. Topics included are geometry and mechanical behavior of twisted, woven, knit, and non-conventional structures under various stress conditions, and end use application.

TES 404, 405 three credits
Processing Dynamics I, II
Prerequisite: upper-division standing in applied fibers option

Theoretical analysis of the dynamics and machine-fiber assembly interaction in textile fabrication processes. The inter-relations between mechanics of production and mechanical properties of yarns, fabrics, and other fiber assemblies are studied. Unit operations required to process fibers to the finished products are considered.

TES 406 three credits
Computer Applications in Textiles
Prerequisite: Knowledge of PCS and textile manufacturing

A survey of computer applications and computer integrated manufacturing (CIM) systems in textiles. The course covers automatic process control, quality monitoring, and manufacturing data acquisition supported by microprocessors and personal computers. Course involves extensive hands-on assignments using MS-DOS, Spreadsheet (LOTUS 1-2-3), word processing, business graphics, databases, and BASIC programming software.

TES 407 three credits
Fiber Reinforced Polymeric Materials
Prerequisites: TES 201, 301

An introduction to advanced composite materials employing fiber reinforcement. Also studied are resins for polymeric matrices, reinforcing fibers, and properties of the resulting structures. Manufacturing techniques and testing of composite materials are examined.

TES 408 three credits
Jaquard Fabrication
Prerequisites: TES 300, 312; or permission of instructor

The execution of complex woven structures for the high end apparel and home furnishings fabric markets. Artistic and technical skills are combined to produce jacquard woven fabrics which are aesthetically and functionally appealing. Color, yarn selection and design are manipulated and organized on a state-of-the art CAD system.

TES 410 three credits
Manufacturing Facilities Design
Prerequisite: senior standing

A study of the design of a new manufacturing plant. General consideration is given to plant design and layout installation, plant service functions, and engineering economy related to plant engineering. New manufacturing methods and processes in industry are surveyed. Computer-aided design and manufacturing (CAD/CAM) concepts and practices are considered in developing layouts of theoretical process- and/or product-oriented plants. Service facilities design is also considered.

TES 411 three credits
Managing Technology
Prerequisite: senior standing

Understanding the impact of technology on manufacturing and society. The course will analyze the effects of technology on society and various business functions, such as product design, manufacturing processes, marketing strategies, and research and development. Topics will include technical innovation, entrepreneurship, and patent protection. Ethical issues related to technology, including product liability, industrial espionage, and the environment, will be discussed.

TES 463 three credits **O**
Senior Project

Exposure to and experience in timely research and development projects either in the laboratory or a real world setting—at companies in the area. Most but not all topics will be in the area of textile sciences: (a) Product Design and Analysis or Reverse Engineering; (b) Plant Design, Marketing, Business Strategy Research based on library work; (c) supervised lab intensive project; (d) Directed/Independent Study with Industrial Internship.

Textile Chemistry Major
BS degree

The Textile Chemistry program offers students a rare opportunity to prepare for careers in the application of chemistry to the coloration and alteration of the aesthetic and functional properties of textile structures. Students receive a thorough understanding of chemistry in addition to specialized instruction in the chemistry of fibers, dyes, finishes, and the applicable technology of manufacturing.

Requirements		Semester Credits	
		First	**Second**
First Year			
TES 105	Contemporary Issues in Textile Science	3	
CHM 151, 152	Principles of Modern Chemistry I, II	3	3
CHM 165, 166	Introduction to Experimentation I, II	2	2
MTH 111, 112	Analytic Geometry and Calculus I, II	4	4
ENL 101, 102	Critical Writing and Reading I, II	3	3
CHM 172	Intro. Computer Programming for Chemists		1
	Elective		3
		15	**16**
Second Year			
TES 252	Textile Seminar	1	
TES 201	Fiber Materials		3
MTH 211	Analytic Geometry and Calculus III	4	
CHM 251, 252	Organic Chemistry I, II	3	3
CHM 265, 266	Organic Chemistry Laboratory I, II	2	2
PHY 113, 114	Physics, I, II	4	4
	Elective		3
		14	**15**
Third Year			
TES 300	Fabric Design and Structure	3	
TES 303, 304	Dyeing, Printing, and Finish I, II	3	3
CHM 305	Modern Methods of Chemical Analysis	3	
CHM 307	Procedures of Chemical Analysis	2	
CHM 315, 316	Physical Chemistry I, II	4	4
TES 406	Computer Applications in Textiles		3
TES 305	Textile Testing		3
	Elective		3
		15	**16**
Fourth Year			
TEC 420	Adv. Topics in Dyeing, Printing,& Finishing	3	
TES 350	Environmental Sci. & Indust. Compliance	3	
TEC 463, 464	Senior Thesis	3	3
TEC 433	Color Science		3
TEC 410	Polymer Chemistry		3
TES 411	Managing Technology **OR**		3
MGT 463	Management of Technology		
	Electives/Textile elective	6	3
		15	**15**
	Total Credits:		**121**

TES 465 three credits
Textile Merchandising and Marketing

Case histories and general discussions of the following subjects: the marketing of textile fibers, yarns, fabric, and garments; the influence of style and fashions on textile industry products; and price policies and other problems characteristic of the textile industry.

TES 475 three credits
Textile Cost Accounting

Principles and problems basic to textile costing; basic cost concepts, cost problems; materials, labor, and manufacturing costs; textile fiber and supplier purchasing; spinning, weaving, and finishing mill costs; textile marketing costs, and financial statements.

TES 482 three credits
Fabric Design for Function

A case study in the development of textile fabrics that have engineering designs to provide specific properties. Examples include dome structures, geotextiles, bullet-proof vest, artificial turf, and medical fabrics. The courses correlates properties of textile materials, engineering principles in textile processing, and the design of fabric structures with the desired properties for a particular functional use.

TES 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

TES 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Gen Ed key

S Natural Science and Technology
O Oral Skills

TEC 101 three credits
Science and Technology of Human Hair

An introduction to the science and technology of human hair and hair-care products. The biology of hair loss, hair treatment, history of hair treatments and fashions, differences between scalp and body hair and the relationship between hair and physical and psychological well-being are examined.

TEC 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

TEC 303 three credits **S**
The Art of Dyeing with Natural Dyes

The natural dyes used by throughout history are discussed. Methods relating to the extraction and preparation of the dyes from woods, bark and insects are studied. Laboratory work consists of the preparation of the dye-baths and the actual application of the dyes to fabrics. Logwood, cochineal, madder, fustic, indigo, quercitron, osage orange and hypernic are some of the dyes utilized. Can only be used as a Free Elective by students in the Textile Sciences Department.

TEC 325 three credits
Textile Chemistry I
Prerequisites: CHM 101, 102; or 151, 152

Introductory course in the chemistry of textile fibers, polymers, dyestuffs, surfactants, bleaching, and other chemicals used in the textile industry.

TEC 326 three credits
Textile Chemistry II

A continuation of TEC 325. An introduction to the fundamental chemistry and principles of dyeing, printing and finishing. All phases of textile wet processing will be covered in order to provide a basic understanding of these various phases of textiles.

TEC 333 three credits
Color Science
Prerequisite: Junior standing

How color affects our everyday life and the formation and measurement of color is described. Laboratory demonstrations and experiments are included in the course.

TEC 402 three credits
Dyeing II
Prerequisites: TEC 303, 304

The colloid science, surface and physical chemistry of fiber/fabric dyeing. An introduction to color physics including dye formulation prediction and color matching by computer methods. Special topics on large-scale dyeing methods and recent advances in dyeing technology.

TEC 410 three credits
Polymer Chemistry
Prerequisite: Senior standing

The physical and organic chemistry of polymers, kinetics, molecular weight determination, polymerization mechanisms, and stereochemistry.

TEC 411 three credits
Textile Printing
Prerequisites: Junior standing in TEC

Methods of printing (roller, screen dyes, pigments, transfer) and the preparation of printing pastes. Direct, discharge and resist printing methods are included.

TEC 420 three credits
Advanced Topics in Dyeing, Printing, and Finishing
Prerequisite: Senior standing in TEC

An in-depth study of dyeing, printing, and finishing, including color measurement, various types of equipment, and process controls used in industry. Students will take field trips to various industrial sites.

TEC 421, 422 three credits each
Chemical Technology of Finishing I, II

Chemical finishes which modify fabric appearance, feel, and serviceability (to shrinkage, soiling, mildew, moths, wrinkling, fire, water, static electricity, etc.) are discussed, along with the means used to apply them. The production of special effects (permanent press, crepe, moire, etc.) is also studied.

TEC 431 three credits
Industrial Chemical Analysis

Chemical analysis and testing of products associated with the textile industry: fibers, dyes, finishes, surfactants and auxiliary products, plus acids, alkalis, oxidizing and reducing agents. The various methods of analysis are critically reviewed.

TEC 442 three credits
Chemistry of Fibers
Prerequisites: CHM 251, 252, 265, 266, TEC 325

The chemistry of natural and synthetic fibers. Studies are made concerning the relationship between the chemical structure and physical properties of fibers.

TEC 463, 464 three credits each **O**
Senior Thesis
Prerequisite: Senior standing

Students prepare a thesis proposal and do laboratory research in one of the following areas: polymer chemistry, fibers, dyeing, printing and finishing. Findings are presented at the end of the second semester.

TEC 485, 486 three or six credits
Introduction to Research
Prerequisite: Junior standing

Textile Chemistry students accepted for research study by a faculty research advisor are assigned a topic for investigation. This course aims to introduce the student to research and develop his or her proficiency in the analysis, solution and presentation of his or her investigating work.

TEC 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

TEC 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Graduate Courses in Textile Chemistry

Note: Textiles graduate courses are not open to undergraduates. See the *Graduate Catalogue* for graduate general and program requirements.

TEC 500 eight credits
Thesis

Written presentation of an original research topic in Textile Chemistry, which demonstrates analysis, ability, and proficiency in the solution. The thesis shall be conducted under the supervision of a faculty advisor. An oral examination in defense of the thesis is required. Graded CR/F.

TEC 501 four credits
Chemistry of Dyestuffs

This course deals with the chemistry and technology of dyestuffs. The raw materials, intermediates and finished dyestuffs are studied in detail. The effect of the constitution on color and fastness properties is emphasized. Theoretical as well as practical and economic points of view are presented. The preparation of typical intermediates and dyestuffs is carried out in the laboratory.

TEC 502 three credits
Physical Chemistry of Dyeing

This is a lecture course concerned with the physicochemical theories of the application of dyestuffs to textile and related materials, including the thermodynamics and kinetic principles involved.

TEC 503 three credits
Physical Chemistry of Surface Active Agents

This lecture course is concerned with the physicochemical principles involved in surface-active agents. The chemical nature of the agents is studied and related to their properties. The technical uses are evaluated on this basis.

TEC 506 three credits
Survey of Current Textiles

Studies in this course include a survey of the fundamental reference works and literature of Textile Chemistry. Timely reports are required concerning recent advances in the manufacture, modification, dyeing and finishing of synthetics and blends.

TEC 508 three credits
Advanced Textile Printing
Prerequisite: TEC 411

The more complex styles of printing, discharge and resist, are covered in detail. The preparation of white and colored print paste for all classes of dyed backgrounds is investigated. Attention is given in dyeing ground shades for discharge printing. Special effects such as Plisse, Burn-out and Vigoreaux styles are considered.

TEC 509 three credits
Chemical Technology of Finishing

This course is more comprehensive than that given in the undergraduate course. Greater detail is provided concerning the mechanisms used in the application of specialized finishes and the chemical reactions involved.

TEC 510 three credits
Polymer Chemistry

The physical and organic chemistry of monomers and polymers, including a consideration of bonding forces, spectroscopic methods of structure determination, structure and property correlations, fractionation, thermodynamics, and methods of molecular weight determination for polymers in solution; the kinetics of condensation and additional polymerization as applied to polymers and copolymers, mechanism of free radical and ionic polymerization, stereospecific polymers, the chemistry of the more common polymers systems, and preparation of their corresponding monomers.

TEC 521 three credits
Textile Chemistry

The mechanics of dyeing, printing, and finishing The structures of dyes and textile fibers, detergency and scouring, and dyeing equipment and procedures, textile finishing and functional requirements of permanent press, softness, water repellancy, and fire retardance.

TEC 523 one-half credit
Textile Laboratory Practice I

Practice and experimentation in the dyeing of fibers with various dyes, wash and lightfastness properties, finishing.

TEC 524 one-half credit
Textile Laboratory Practice II

A continuation of TET 524, includes fiber microscopy, textile printing exercises, experiments in color science including measurement and assessment.

TEC 525 three credits
Fiber Materials
Prerequisite: TEC 201 or equivalent

The structure and production of fibers, including molecular arrangements and morphologies. The conversion of fibers into textile yarn structures and the relationship between physical and chemical properties of fibers and processing dynamics on the yarn properties will be studied.

TEC 533 three credits
Computer Color Matching
2 hours lecture, 3 hours laboratory
Prerequisite: Graduate or senior standing in textiles

A complete discussion of color science and computer match prediction in dyeing fibers, yarns, and fabrics. Objective specification of color, color difference, measurements, and various color spaces are introduced. Based on color theory and numerical analysis, computer match prediction algorithms are discussed. Practical fiber/dye data files are created and used to reproduce dyed samples with the match prediction software in accompanying computer color matching labs.

TEC 595
Independent Study
Prerequisites: Permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

TEC 596 three credits
Directed Study
Prerequisites: Permission of the instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Textile Technology Courses

TET 401 three credits
Advanced Yarn Technology
Prerequisites: TES 301

Discussions of the stress-strain properties of fibers and their relation to processing and product characteristics. Blends, blend systems, and the processing of blend and 100% synthetic staple material into yarns is also emphasized. Other selected topics will also be considered.

TET 419 three credits
Synthetic Fiber Processes
Prerequisite: TES 201

Synthesis of polymeric materials and their extrusion into films and fibers. Manufacture of the major synthetic fibers, namely polyamide, polyester, acrylics and polypropylene, is discussed in depth. Newer fibers such as those derived from aromatic polyamides are also covered. This course also deals with the relative merits of the various fibers in terms of economics and performance.

TET 470 three credits
Advanced Knitting Technology
Prerequisite: TES 302

A study of knit fabrics made on Raschel and Warp knitting machines, together with the creation of new designs and the formation of many types of webbing using different yarns. Charts are made of the sample to indicate the variances in types of yarns—fabric reactions from fine gauge knit lace to course webbings. Finishing requirements of these particular fabrics are studied.

Graduate Courses in Textile Technology

Note: Graduate courses are not open to undergraduates. See the *Graduate Catalogue* for graduate general and program requirements.

TET 500 eight credits
Thesis

Written presentation of an original research topic in Textile Technology, which demonstrates analysis, ability, and proficiency in the solution. The thesis shall be conducted under the supervision of a faculty advisor. An oral examination in defense of the thesis is required. Graded CR/F.

TET 501 three credits
Yarn Technology I
Prerequisite: Graduate standing

Aspects of yarn processing which affect the properties of the product during the various stages of manufacturing. Extensive use of reference materials is required in completion of written reports on subject matter assigned. To familiarize the student with research procedures and the evaluation of results, actual project reports will be studied.

TET 503 one credit
Research Techniques

Aids the student in better understanding research approach and techniques. To develop an insight as to the evaluation of research results. A proposal on an original research topic must be submitted and approved.

TET 504 three credits
Graduate Seminar

Student discussions on selected topics will be carried out under the supervision of a faculty member. Written papers to be submitted on those topics assigned.

TET 506 three credits
Independent Study

Individual study under the supervision of a faculty member in an area of textiles not otherwise a part of the course offerings. Students shall be held responsible for meeting the requirements of independent study as outlined in an approved proposal.

TET 507 three credits
Textile Microscopy and Photomicrography
Prerequisite: TES 462 or equivalent

The study of fibrous materials with various microscopic methods. Several photomicrographic techniques are explored.

TET 508 three credits
Design and Analysis of Experiments
Prerequisites: Graduate standing

A study of the statistical methods and systems employed in the design of experiments, the testing of materials, and the evaluation of test data.

TET 517 three credits
Fiber Reinforced Polymeric Materials
2 hours lecture, 3 hours laboratory
Prerequisite: Graduate or senior standing

An introduction to advanced composite materials employing fiber reinforcement. Also studied are resins for polymeric matrices, reinforcing fibers, and properties of the resulting structures. Manufacturing techniques and testing of composite materials are examined.

TET 521 three credits
Statistical Methods of Quality Control

A study of methods and systems by the use of statistical analysis in the design of experiments, in the testing of materials and in the evaluation of test data as applied in the interest of improvement and control of quality, as well as studies of processing efficiency.

TET 563 three credits
Fibrous Structure
Prerequisite: TES 201 or equivalent

The molecular structure and arrangements of molecules in fibers are considered with respect to giving a foundation to the understanding of the physical and mechanical properties and behavior of textile raw materials. The properties are examined from a fundamental viewpoint so that a sound approach to the technological utilization of fibers in textiles can be established. An introduction is made to the interrelation between fiber properties and yarn and fabric geometry in determining the behavior of textiles.

TET 564 three credits
Mechanics of Fibrous Structures
Prequisite: Graduate standing

A study of the mechanics of fibrous assemblies such as twisted structures (yarns, rope, braid), woven, knitted, and non-woven fabrics. The methods of continuum mechanics and differential geometry to interrelate material properties and end-use properties are considered.

TET 595 variable credit
Independent Study
Prerequisites: Permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

TET 596 three credits
Directed Study
Prerequisites: Permission of the instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

College of Nursing

Professional nurses provide health care services across the life span and in varied environments. Nursing is concerned with promoting, maintaining and restoring health. Nursing is committed to the goal of promoting an optimal level of functioning for all individuals, families and groups; thereby contributing to the health of the nation.

Professional nurses determine health status of individuals, families, and populations and make clinical decisions regarding the appropriate action to be taken. They collaborate and cooperate with other members of the health team such as the physician, social worker, physical therapist, pharmacist, and occupational therapist. Nursing plays an essential role in advocating high-quality affordable health care for all members of society and in shaping health policy.

Professional nursing requires a broad background of knowledge in arts, sciences, and nursing, including clinical and cognitive skills of analysis, critical thinking, therapeutic intervention, and communication. The American Nurses' Association (representing nurses throughout the United States) thus recommends the baccalaureate degree as the basic educational foundation for professional nursing practice.

Faculty and Fields of Interest

Community Nursing

Ora De Jesus gerontological nurse practitioner

Ann Marie Hedquist nutrition

Janet Kenty maternal-child health nursing

Jean Maher community health nursing

Carol Mailloux maternity nursing

Katherine Meyer community health nursing

Sonja Stone Peterson psychiatric/mental health nursing

Joan C. Pisarczyk (chairperson) community health nursing

Sharon Sousa psychiatric/mental health nursing

Institutional Nursing

Gina Ankner adult health

Ellen Christian (chairperson) child health

Kimberly Christopher adult health

Jeannie Crabtree family nurse practioner

Phyllis Currier adult health

Mary Ann Dillon child health

Nancy M. Dluhy adult health

Shirley B. Dufresne pediatric nursing

Kathleen M. Elliot adult health

Kerry H. Fater adult health

Lorraine Fisher medical-surgical nursing

Leslie C. Frost pediatric and adult health

Elissa Ladd adult nurse practitioner and gerontological nurse practitioner

Susan Hunter adult health

Robin Ketchen adult health

Eileen S. O'Neill adult health

Elisabeth A. Pennington (dean of the college) adult health

Lynne Roney child health

Mission and Goals

The mission of the UMass Dartmouth College of Nursing is to provide visionary leadership to advance the practice of nursing in a dynamic environment. The college is committed to generate collaborative and consultative relationships with professional colleagues and consumers to enhance the health of the region and beyond. The college actualizes this mission by providing excellent nursing education, meaningful service, and challenging scholarship opportunities to diverse populations.

The College fulfills its mission by pursuit of the following goals:

1.
To provide full-time and part-time undergraduate study leading to a Bachelor of Science degree in nursing as a foundation for professional practice.

2.
To offer full-time and part-time graduate programs leading to a Master of Science degree in nursing for advanced practice.

3.
To prepare leaders in the delivery of cost-effective innovative health care which promotes beneficial consumer outcomes.

4.
To foster creative and critical thinking that advances the discipline of nursing.

5.
To integrate concepts of health within the fabric of the University and the region.

6.
To create and sustain an environment for nursing scholarship and research within the university and region.

7.
To expand partnerships to improve the health status of the population.

8.
To facilitate the exploration of political, social, and economic factors influencing the present and future of health care.

Programs

The College of Nursing at University of Massachusetts Dartmouth is approved by the Massachusetts Board of Registration in Nursing, and the baccalaureate and graduate programs are accredited by the National League for Nursing.

The College of Nursing offers the only baccalaureate and graduate degree programs in southeastern Massachusetts. Students are admitted to one of two baccalaureate options: Students with no prior nursing education, and Licensed Practical Nurses, are admitted to the basic options. The second option, a flexible-access track for RNs, provides the opportunity for registered nurses who are graduates of associate degree and/or diploma schools to complete requirements for the bachelor's degree in nursing.

The College of Nursing offers the Masters of Science Degree (MS) for Advanced Practice Nursing, with tracks for
- Adult Advanced Practice
- Adult Nurse Practitioner
- Community Nursing Advanced Practice

For details of graduate program admission requirements and curriculum, please refer to the graduate catalog.

All programs in the College of Nursing are accredited by the National League for Nursing Accreditation Commission (NLNAC), 61 Broadway, New York, NY 10006; phone 212 363-5555.

1.
The minimum passing grade for all courses except electives is "C-."
2.
Students may repeat a course only once, only as space is available, with the consent of the department chairperson and the student's advisor. A second failure (grade below C-) in the same course will result in disenrollment from the College of Nursing.
3.
At the end of each program year, the student must have an overall 2.0 cumulative grade point average. At the end of the sophomore year and for subsequent program years, the student must also have a cumulative average of 2.0 in the nursing major. Failure to meet these criteria will result in academic probation.
4.
After the completion of three semesters, students with a GPA of less than 2.0 in nursing major courses will be placed on academic probation. All students placed on academic probation must meet with their academic advisors and an individualized program plan will be developed and filed in the Dean's office. If at the completion of two subsequent semesters students do not have an overall GPA of 2.0 in the nursing major, they will be subject to academic disqualification from the nursing major.
5.
The following number of credits must have been successfully completed at the end of each program year:

End of	*Credits Completed*
Freshman Year	30
Sophomore Year	62
Junior Year	92
Senior Year	122

6.
A student who earns less than "C-" in 12 credits of required nursing courses will be disqualified from the nursing major.
7.
Students have a right to appeal grades. Please refer to the grade appeal policy in the academic regulations section of the catalog.
8.
Enrollment in each required NUR course can only be approved on completion of the NUR prerequisites to that course. Within a given academic year, the student may not have completed all non-nursing prerequisites for Spring semester courses. However, before the student can progress to the required NUR course for the next program year, both nursing and non-nursing prerequisites must have been completed. Early registration for a required *NUR* course does not alter these prerequisites for progression.
9.
Theory and lab/clinical components of a nursing course must be taken simultaneously, and both components must be passed for successful completion of the course. The theory grade is submitted to the Registrar as the final course grade and is recorded on the transcript for both course components.
10.
Status and eligibility for progression in undergraduate nursing programs are determined on the basis of an annual review conducted in June in the office of the dean. Each student receives formal written notification of status based upon the annual review.
11.
Selection of students eligible for progression may be limited by the availability of faculty and/or clinical placements. In the event that the number of eligible students exceeds available resources, students will be selected on the basis of academic standing.
12.
Students are responsible for being certified for cardiopulmonary resuscitation (CPR) prior to the beginning of each academic year in which they enroll in clinical courses. A copy of the certification must be on file in the Dean's office.
13.
Students in the basic program must purchase student liability insurance through the university bursar's office prior to each academic year in which they enroll in clinical courses. RN students must submit a copy of current professional liability insurance to the dean's office prior to each academic year in which they enroll in clinical courses.
14.
Students are responsible to provide their own transportation to clinical agencies.
15.
Students are responsible to have a complete physical examination and appropriate immunizations during the summer preceding each academic year in which they enroll in clinical courses. The written reports must be on file in the university health office prior to the student's receiving a clinical assignment.
16.
Students will not be allowed to proceed in a clinical course without evidence of CPR certification, liability insurance, a complete physical examination, appropriate immunizations, and CORI Review.
17.
Any exceptions to the above academic policies will be considered by the dean only on recommendation of the student's academic advisor.
18.
The faculty reserve the right to change a student's selection of clinical site in order to consolidate sections, as necessary.

Nursing BS degree

The College of Nursing offers two undergraduate programs, each leading to the degree of Bachelor of Science.

The undergraduate curriculum in both programs emphasizes critical thinking, clinical decision making, therapeutic interventions, and communication skills.

The American Nurses Association Code of Ethics and Professional Standards of Practice for basic practices guides all clinical learning activities.

The baccalaureate graduate of the UMass Dartmouth College of Nursing curriculum:

- understands and exhibits the attributes of an educated, healthy, informed citizen;
- implements the concept of professional responsibility and accountability for self and colleagues as a basis for delivery of health care;
- synthesizes theoretical and empirical knowledge from the humanities, the physical and behavioral sciences and nursing as a theoretical base for assisting client systems to achieve optimal level of functioning;
- understands the research process and applies research findings to nursing practice;
- provides nursing care utilizing the nursing process: assessing, goal-setting, planning, implementing and evaluating the results of nursing intervention for individuals, families and communities;
- participates and collaborates in or manages the delivery of nursing care to the well and to the acutely, chronically and terminally ill, at any age or stage of development, irrespective of environment or client system level; and
- participates in identifying and effecting needed change to improve delivery of health care to all client system levels as a result of accurate, reliable interpretation of valid data.

Basic Undergraduate Program

Studies in the sciences and liberal arts provide the base required to integrate a conceptual approach to the study of nursing that begins in the sophomore year.

In the sophomore year, students are taught to interact with individuals using successive phases of the nursing process. They acquire skills in observation and communication necessary to assess an individual's needs, set measurable and realistic goals of nursing care, and devise a plan of care to attain the goals. Students acquire the basic nursing skills to implement the care plan. They evaluate the outcome of the nursing care plan in accordance with the goals previously set.

In the junior year, the scope of the students' experiences broadens to include family groups and populations at risk. Students develop skills in caring for acutely ill adults, childbearing and childrearing families in the hospital and community, as well as populations at risk in communities. The family as a unit of care, as well as populations at risk in communities, become the foci for the nursing process.

In the senior year, the students learn to interact with persons at all levels of the hospital and long-term care structures, and with individuals in social and welfare agencies that impact the distribution of health care. The complexity of nursing care required by clients increases and students develop skills in managing complex health needs. Additionally, Critical Thinking, Oral and Written Communication, and Therapeutic Nursing intervention skills are refined.

Freshman Admission

Students are admitted to the basic baccalaureate nursing program through the University Office of Admissions. Applicants to the Nursing Program, in addition to fulfilling the requirements for all University students, must have had a secondary school program including at least three units of mathematics and two laboratory courses of natural sciences. The three units of mathematics must include two units of algebra.

Placement Exam—Math

Freshman students admitted to the College of Nursing must take the math placement examination during orientation. The results of that examination may require students to receive tutoring or additional instruction.

Admission by Transfer

All students admitted to UMass Dartmouth by transfer after having completed some course work at other colleges must meet the same entrance requirements as those who apply as freshmen.

Credits earned in another college, for which grades meet the academic policy in effect for the class to which the student is admitted, may be accepted as transfer credits after evaluation of official transcripts. Science credits earned more than seven years prior to formal admission into the University cannot be transferred. The required science courses must then be repeated or verified by examination. All applicants for transfer admission whose transcripts contain course work in the biological sciences which is difficult to evaluate may write tests offered by the Department of Biology and, if successful, will be excused from the courses in Anatomy & Physiology and Microbiology and be granted the corresponding credits. In addition, credits may be earned by successfully writing the appropriate CLEP examinations open to all university students.

Course of Study
Basic Baccalaureate Nursing

Health Policies

Students admitted to the nursing program are expected to have a complete physical examination and the appropriate immunizations during the summer preceding their sophomore, junior, and senior year clinical courses.

Students must also be certified in CPR. Details of these requirements are outlined in the College of Nursing Student Handbook.

All students must undergo a Criminal Offense Record Investigation (CORI) before entering clinical courses. This check is administered through the College of Nursing to the Massachusetts CORI Board.

Typical Program Plan

The basic nursing program is eight semesters long and leads to the Bachelor of Science degree.

Students may study full-time or part-time or follow a five-year curriculum plan rather than the traditional four-year plan.

Generally students must complete one program level before progressing to the next level, because courses build on previous knowledge.

In the junior and senior year, there are two options for sequence of courses. Detailed information on those options is available from the academic advisors at the time of early registration for spring semester junior year.

Exception to progression policies or prerequisites can only be made by the Dean on recommendation of the faculty advisor.

All students take examinations to document critical thinking ability. These examinations occur at freshman orientation, in junior year and prior to graduation. These examinations do not affect progression or student grades. The results of these examinations are used for documentation of outcomes. Outcome evaluation of other abilities including therapeutic interventions and communication are documented by review of randomly selected student works. All students, in all programs, may have their work chosen for review. The results of these outcome reviews will be reported in the aggregate, preserving the students' privacy and anonymity. Results are used for program evaluation and accreditation.

All students must complete the university's general education requirements prior to graduation.

Freshman year

During the Freshman year the student must complete the following course requirements for progression to the Sophomore year:

	Credits
ENL 101,102 Critical Writing/Reading	6
Math (101 or higher)	3
Philosophy	3
Psychology 101	3
Sociology 101	3
Natural Sciences	
CHM 101,102 General Chemistry	6
BIO 154 Fundamentals of Biology	3
NUR 105 Nutrition	3
Total	**30**

Students must have completed 30 credits by the end of the Freshman year.

Sophomore year

In the Sophomore year students begin to develop skills in nursing care. The student must complete the following course requirements for progression to the Junior year.

	Credits
Natural Sciences	
BIO 221, 223, 222, 224 Anatomy and Physiology	8
BIO 252 Medical Microbiology	4
General Education	
Global Awareness	3
Diversity	3
Nursing	
NUR 204 Nursing as a Health Profession — Theory and Concepts	2
NUR 240, 241 Health Assessment through the Life Span	3
NUR 290, 291 Nursing Care of Persons with Alterations in optimal level of functioning	6
NUR 303 Selected Mechanisms of Disease and Related Pharmacology	3
Total	**32**
Cumulative Total	**62**

Junior year

In the Junior year students gain nursing skill in caring for hospitalized adults and childbearing and child-rearing families. Students must complete the following course requirements for progression to the Senior year.

	Credits
General Education	
Humanities	3
Nursing	
NUR 304 Mechanisms of Disease and Related Pharmacology	3
NUR 314 Fundamentals of Nursing Research	3
NUR 320, 321 Nursing Care of Hospitalized Adults	9
NUR 332 Concepts of Family Care	3
NUR 334, 335 Nursing Care of Beginning Families	4
NUR 336, 337 Nursing Care of Children	5
Total	**30**
Cumulative Total	**92**

Senior year

In the Senior year students care for persons with complex health problems in a variety of settings.

	Credits
General Education	
Elective course	3
Humanities	3
Nursing	
NUR 420, 421 Psychiatric Mental Health Nursing	6
NUR 430, 431 Community Nursing	6
NUR 408 Contemporary Issues in Nursing	2
NUR 440, 441 Nursing Management in Long-Term Care	3
NUR 450, 451 Nursing Management in Acute Care	7
Total	**30**
Total Credits:	**122**

Baccalaureate Nursing Program for RNs

This program is designed to complement the structure and requirements of the basic professional program described previously through building on previous nursing education at the technical level. It allows part-time enrollment and creative clinical experiences. Every effort is made to schedule nursing courses in patterns which facilitate accommodation with the work and personal obligations of the typical RN student.

Admission

Applicants to the RN program apply for admission as transfer students through the University Admissions Office. Fall matriculation in this program requires a student to have an associate's degree in nursing or hospital diploma. A current Massachusetts RN license is also required. To be considered, applicants are not required to have met these requirements at the time of application but must be able to meet them before the first semester of enrollment.

Articulation Agreement with Area Community Colleges

Faculty of Bristol, Cape Cod and Massasoit Community Colleges and UMass Dartmouth nursing faculty have established the comparability of courses in UMass Dartmouth and the three associate degree nursing programs. Individuals who received the associate degree in nursing from one of these three community colleges after 1984 are granted 30 nursing credits by direct transfer of equivalent courses.

RN Track Residency Requirement

RN track nursing students have a 45-credit residency requirement.

Transfer Credits

Nursing Transfer Credits

All RNs are able to transfer a maximum of 30 nursing credits as the equivalent of 30 of the 68 NUR credits required in the major for graduation. These 30 credits must have been transferred prior to enrollment in the first required clinical nursing sequence, NUR 305, 315.

Nursing Transfer Credits by Challenge Examination

There is a seven-year limit on the transfer of nursing and science credits. Nurses who were prepared for the RN licensing examination in hospital diploma schools of nursing, or in an associate degree program **other** than Bristol, Cape Cod or Massasoit Community Colleges, or who graduated from one of the three area community colleges within this seven-year limit, receive the 30 nursing credits only after performing successfully on the following five (5) tests offered by the American College Testing Proficiency Examination Program (ACT PEP):

#427 Commonalities - A
#478 Commonalities - B
#457 Maternal-Child Nursing
#503 Psychiatric/Mental Health Nursing
#554 Adult Nursing

Non-Nursing Transfer Credits

RN students are allowed to transfer credits for liberal arts, science, and humanities courses taken at a regionally-accredited community or junior college. RNs may transfer all but 45 credits.

Non-Nursing Transfer Credits by Challenge Examination

The following required courses may be challenged by UMass Dartmouth teacher-made exams, and successful performance will result in awarding of equivalent UMass Dartmouth credits: Anatomy and Physiology, Medical Microbiology, Human Nutrition (NUR 105).

Science credits

Science courses taken in any college or university, including UMass Dartmouth, can be accepted in transfer only if those credits are no more than seven years old at the time the student is admitted to Nursing at UMass Dartmouth.

Academic Advisement and Requirements for RN Students

Academic Requirements for the RN Baccalaureate Student

University academic regulations and those described for all nursing students also apply to the Baccalaureate Program for the RN. A current Massachusetts RN license is required for admission to the RN program and must be on file at the beginning of any semester in which the student is enrolled in a clinical nursing course. Liability insurance, CPR certification, immunization, and health status report are also required.

RN students also take a series of critical thinking examinations. These examinations are taken at entry and exit points in the curriculum.

Academic Advisement

Individual RNs have highly unique backgrounds, academic records and needs. Academic advisement is critical to a successful academic experience for the student. Systematic advisement can only be provided once the RN student has applied and been accepted (matriculated) as a UMass Dartmouth nursing student. RNs are encouraged to seek information early in their planning to return to college for the baccalaureate degree. To assist in that planning, the following advisors are available during the academic year:

Professor Anne Marie Hedquist
Director, RN Program
Office: Dion, 201C
(508) 999-8194

During the summer months (June - August and vacation periods), information can be obtained from the office of the Dean, (508) 999-8586.

For information about Testing, contact:
Division of Continuing Education
(508) 999-8039

Summary of Course Requirements

Non-nursing credits	59
Nursing credits through Transfer or ACT/PEP	30
UMass Dartmouth required Nursing credits	33
Total Credits for Graduation	122

Course of Study
The RN Track

Nursing Requirements–33 credits earned at UMass Dartmouth:

NUR 105 Human Nutrition	3
NUR 302 Disease and Related Pharmacology for RN Students	3
NUR 306** Professional Nursing Concepts	4
NUR 322 Extended Assessment Skills for Nurses	3
NUR 314 Fundamentals of Nursing Research	3
NUR 332** Concepts of Family Care	3
NUR 430, 431** Community Nursing	6
NUR 408 Contemporary Issues in Nursing	2
NUR 452, 453** Nursing Management Across the Continuum of Care	6
Total	**33**

** These courses include clinical experience.

Non-Nursing Requirements–59 credits

The following 39 credits are to be completed prior to registration for the first clinical course.

English	6
Chemistry	6
Anatomy and Physiology	8
Microbiology	4
Math (101 or higher)	3
Social Sciences	12

The following 20 credits may be completed at any time.

Humanities (Philosophy)	3
Biology	3
Humanities electives	6
Free electives	8
Total	**59**

Nursing Courses

NUR 105 three credits **S**
Human Nutrition

The principles of human nutrition. Main classifications of nutrients will be covered with emphasis on their role in health maintenance. Factors which affect the nutritional status of individuals, including stage in the life cycle, will also be introduced along with current nutritional problems in the U.S. May fulfill elective credits for non-nursing majors.

NUR 204 two credits
Nursing as a Health Profession: Theoretical and Conceptual Basis of Practice

The role of professional nursing in the health care delivery system. The historical, socioeconomic and political context of nursing will be discussed together with the theoretical basis and content of nursing practice.

NUR 207 (WMS 207) three credits
Womens' Health Issues
elective

Women's health needs throughout the life stages. The course explores the significance of women's reproductive capacity, in a physiological, psychological, and social context and provides a framework for discussion of related issues. The course presents basic health information to assist students in promoting positive personal health.

NUR 230 three credits
Holistic Health Promotion
elective

An exploration of the role of genetic endowment, environment, and lifestyle behaviors in achieving optimal health for individuals. A life-span developmental approach is utilized in considering health practices intended to enhance health status and well-being for all age groups. Students will examine their own health status and develop a personal health promotion program.

NUR 240/241 two credits theory/one credit laboratory
Health Assessment Through the Life Span
Corequisites: BIO 221, 223

Introduces the student to parameters of health for individuals representing various ages and stages across the life span. Communication skills are stressed in developing the nurse/client relationship. Emphasis is on the systematic assessment of healthy individuals as a first step in the nursing process.

NUR 290/291 three credits theory/three credits clinical
Nursing Care of Persons with Alterations in Optimal Level of Functioning
Prerequisites: NUR 204, 240, 241, BIO 252
Corequisite: NUR 303

This theory/clinical laboratory course focuses on application of the nursing process in support of the individual adult client with selected alterations affecting optimal level of function (nursing diagnoses). Emphasis is on the acquisition of basic skills for use in appropriate intervention with selected nursing diagnoses.

NUR 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

NUR 302 three credits
Selected Mechanisms of Disease and Related Pharmacology
Prerequisites: RN status; BIO 221, 222, or ACT-PEP

Disease processes in humans. Content selected for study is chosen specifically to enhance the RN student's understanding of basic pathophysiologic concepts and is essential to understand the rationale for clinical judgment and therapeutic intervention in disease conditions. The ability of human beings to adapt to stressors is discussed throughout the course. Concepts of pharmacology and drug therapy are integrated to allow students to utilize this information in clinical practice.

Gen Ed Key

S Natural Science and Technology

Note: Theory portion meets one 50 minute session per credit; clinical/lab portion meets three 50 minute sessions per credit.

Gen Ed Key

S Natural Science and Technology

NUR 303/304 three credits each term **S**
Selected Mechanisms of Disease and Related Pharmacology I, II
Prerequisites or Corequisites: BIO 221, 223, BIO 222, 224, 252

Introduction to disease processes humans. Humans' responses and adaptation to injury and disease are discussed throughout. The content selected for study provides the rationale for clinical decision making and therapeutic interventions in disease conditions. Concepts of pharmacology are integrated throughout these courses.

NUR 306 four credits
Professional Nursing

Professional role development for RN students, addressing nursing issues through critical analysis of the historical influences, philosophical perspectives, and socioeconomic factors which impact professional role development. Emphasis will be on theoretical knowledge influencing client outcomes in various settings. Effective, creative communication skills leading to role transformation behaviors will be encouraged through the use of group process activities.

NUR 314 three credits
Fundamentals of Nursing Research
Prerequisite: Junior standing

Introduces the student to research as it relates to nursing practice and consequent improvement in health care. Content includes research design, methods of data collection and exploration of analytical procedures for interpretation of data. Emphasis is placed upon the use of clinical nursing research findings.

NUR 320/321 four credits theory/five credits clinical
Nursing Care of Hospitalized Adults
Prerequisite: Junior standing
Corequisites: NUR 304, 314

The application of the nursing process consistent with ANA Standards of Clinical Nursing Practice in support of adult clients experiencing multiple alterations in optimal level of functioning (OLF). Focus is placed on nursing interventions appropriate to clients with acute needs and multiple nurs-ing diagnoses. Critical thinking, communication, and therapeutic nursing intervention skill development are emphasized.

NUR 322 three credits
Extended Assessment Skills for Nurses
Prerequisite: must have a current R.N. license

Provides registered nurses with instruction and practice in physical examination skills, obtaining a health history, and recognizing abnormal findings. This course or its equivalent is prerequisite to the graduate program.

NUR 332 three credits
Concepts of Family Care
Prerequisite: Junior standing (basic program)

This course introduces the student to application of nursing process to the family. Students will draw from a variety of theories and conceptual frameworks to guide the gathering and interpretation of assessment data. Emphasis is placed on assessment and nursing interventions to support or strengthen optimal level of functioning (OLF) for families across the life cycle. Formerly NUR 330, 331.

NUR 334/335 two credits theory/two credits clinical
Nursing Care of Beginning Families
Prerequisites: Junior standing and NUR 320, 321
Corequisites: NUR 332

This theory/clinical lab course focuses on the nursing care required by the childbearing and childrearing family as they adapt to developmental and situational stressors. The student applies the nursing process to the care of parents, children and families in collaboration with other members of the health team. Clinical experience occurs in a variety of community and institutional settings.

NUR 336/337 two credits theory/three credits clinical
Nursing Care of Children
Prerequisites: Junior standing and NUR 320, 321
Corequisite: NUR 332

This theory/clinical lab course focuses on the nursing care of children from infancy through adolescence and their families within a developmental framework, identifying ways to support the child's adaptation to developmental or situational stress. Emphasis is on the responses of children and their families to health maintenance measures, illness, injury and hospitalization.

NUR 408 two credits
Contemporary Issues in Nursing
Prerequisite: Senior standing

Expands the student's understanding of the way in which historical, socioeconomic, and political forces have influenced both the nursing profession and the nursing professional, and of ways in which an understanding of those forces can help nurses to shape the future of nursing. Emphasis is placed on the identification of strategies for confronting and dealing with issues in nursing.

NUR 420/421 three credits theory/three credits clinical
Psychiatric Mental Health Nursing
Prerequisites: Junior standing and NUR 320, 321

Theory/clinical lab course introducing the student to selected nursing and other theories of psychiatric and mental health nursing as the basis for application of nursing process to individuals with alterations in mental health. The goal of nursing with the client population is to promote optimal mental health of individuals and small groups within the context of the family and community. Emphasis will be on the evaluation of client outcomes attributable to care provided by nursing and other members of the health team.

NUR 430/431 three credits theory/three credits clinical
Community Nursing
Prerequisites: Junior standing, NUR 320, 321 (basic program); NUR 306 (RN program)
Corequisite: NUR 332

Theory/clinical lab course introducing the student to the community and aggregate populations as the client, and examining the role of the community health nurse as a facilitator of change in communities and populations. Principles of epidemiology, demography, environmental sciences and political organizations are synthesized with nursing concepts and principles to provide the basis for community nursing practice. Using the community process, stressors on and adaptations of communities and aggregates within communities are assessed, and theory based nursing care plans for populations are developed. Emphasis will be placed on implementation and evaluation of interventions designed to promote health of populations at risk by maximizing the population's self care potential.

Note: Some graduate courses may be open to undergraduates. Please consult your department chairperson. See the *Graduate Catalogue* for graduate general and program requirements.

Graduate Courses in Nursing

NUR 440/441 two credits theory/one credit clinical
Nursing Management in the Long-Term Care System
Prerequisites: Senior standing (basic program); NUR 306 (RN)
Corequisites: NUR 450, 451 (basic program); none (RN)

The clinical management role of the professional nurse in the nursing care of older adults. Nursing practice occurs in skilled nursing facilities and other settings that provide students with the opportunity for clinical decision making, health promotion, health teaching, and referral within the long-term care system. Long-term care system regulatory processes, public policy, legal and ethical issues, and socioeconomic and cultural variables will be considered as they affect client outcomes.

NUR 450/451 three credits theory/four credits clinical
Nursing Management in Acute Care
Prerequisites: Senior standing

Theoretical concepts, research, and intervention strategies essential to the nursing management of the acutely ill client, and consistent with the ANA Standards of Clinical Nursing Practice. Students are provided with opportunities to demonstrate synthesis of their learning in a variety of practice settings. Socio-environmental factors which influence client and nurse health care decisions are analyzed. Opportunities to apply principles of leadership/management in practice are provided. The collaborator, advocate, and leadership roles of the nurse are stressed. Critical thinking, communication, and therapeutic nursing intervention skills in nursing practice are refined. Clinical settings include acute care hospitals, and clients' homes.

NUR 452/453 three credits theory/ three credits clinical
Nursing Management Across the Continuum of Care
Prerequisites: NUR 306, NUR 322

The nursing management of adults experiencing chronic health problems with complex responses. Emphasis is placed on the assessment of the functional health status of middle and older adults and families in multiple care settings. This theory/clinical course is designed to provide students with knowledge from bio-psychosocial sciences, nursing theory and research, and philosophy that supports a multidimensional perspective on the experience of chronicity. Selected concepts of chronicity such as quality of life, altered mobility, sexuality, body image, stigma, social isolation, compliance and chronic pain are applied in clinical experiences with clients across the continuum of care. Nursing models are used to guide implementation of the nursing process for adults of various developmental stages.

NUR 481/581 three credits
Women's Health Seminar
Prerequisites: Seniors must have minimum GPA of 3.2

Research into the causes, treatments, and prevention of health problems that affect the quality of life of adult women in the United States. Material from the NIH, Office of Research on Women's Health, and other relevant studies will be reviewed using electronic and other data sources. Issues that pertain to women's health will be addressed as related to diseases, disorders, and conditions that are unique to, more prevalent among, or far more serious for women than for men. Factors such as biological processes, lifestyle, racial, ethnic, age, and socioeconomic variables will be studied.

NUR 485/585 three credits **S**
Environmental Health
Prerequisite: Introductory Chemistry or Biology or permission of the instructor

The interaction of the environment and human health, from the perspective of an ecological framework. Physical, psychological, and psychosocial health responses to environmental toxins and infectious agents will be a central theme. Previous endeavors to maintain and improve the environment through the legislative process, public policy and regulation will be studied by examining case studies. The effects of war on the environment and public health will also be studied.

NUR 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

NUR 500 three credits
Theory Building in Nursing

Examination of (a) components of theories, various activities of theory development and theoretical/conceptual analysis, and (b) the evolution and status of theory development in nursing. Particular emphasis will be placed on the relationship of theory-research-practice in nursing knowledge development.

NUR 503 three credits
Transition to Advanced Practice Nursing

Designed for nurses with bachelor's degrees in areas other than nursing, provides a common knowledge base including the community perspective as a foundation for graduate study in nursing. The realities of modern nursing practice are examined.

NUR 511 three credits
Research Methodology in Nursing

Assists students in identifying and exploring researchable problems in nursing. Components of the research process are examined. Both quantitative and qualitative approaches to generating and testing nursing knowledge and the associated philosophies of each approach are examined. The focus of the course is on (a) understanding and judging the usefulness of scientific information for clinical nursing practice, (b) valuing research as a basis for professional nursing, and (c) collaborating in research activities.

NUR 515 three credits
Managing Organizational Resources

The use of financial and human resources to fulfill the function of nursing in a health agency. Coalition building, negotiation, and conflict resolution skills will be developed to facilitate roles in the bureaucratic environment. Alternate approaches to leadership styles, management skills, utilization of personnel, interpersonal negotiations, budget management and the nurse leader in the organizational structure will be explored.

NUR 520 three credits
Health Care Systems

The nature of the health care system. The focus will be on the history, development, financing, and regulation of the health care system. Selected mechanisms for change such as policy formation, cost analysis,

rationing, accreditation, and quality assurance programs will be examined.

NUR 538 two credits
Theories of Health Promotion and Education

Methods to promote health and to educate individuals, families, and groups about health. Research in health behavior and education are explored. Each student will plan a health education or health promotion project and will write a grant to seek funding for the project.

NUR 540 three credits
Biostatistics and Epidemiology

Principles, concepts, and methods of biostatistics and epidemiology. Strategies to measure the health status of populations are addressed such as surveillance activities and screening programs. The student's critical thinking and decision-making skills are developed through the use of case studies, interactive teaching, seminars, and analysis of current literature in public health.

NUR 541 two credits theory/
one credit practicum
Case Management in the Health Care of Families

Analyzing theories of family development and interaction to develop a conceptual base for assessment of family health needs. Students will be expected to develop/or critically examine the defining characteristics of a family-based nursing diagnosis. Emphasis will be placed on nursing interventions for families in crises due to family dysfunction or the occurrence of HIV infection, chronic illness, or social pathology. Case management as a strategy for meeting family health needs will be utilized in a clinical setting.

NUR 548 three credits
Methods in Community/School Assessment
Prerequisite: permission of instructor

Provides students with knowledge and skills needed to assess the health status of a community school. Students will systematically examine the health and population data of a community, collect and analyze such data, and evaluate the structure of the health care system and distribution of health care resources in their community. Principles of demography and epidemiology will be applied and the core public health nursing functions of assessment, assurance, and policy development will be presented throughout the course. Principles of social justice, accountability, and ethics are emphasized as well.

NUR 550 three credits
Pathophysiological Bases for Advanced Nursing Practice

The interrelationship of human systems and the effect of illness on the individual as a whole. Students examine prototypic concepts and patterns related to clinical physiology using current texts and research literature. The pathophysiology of various body processes such as oxygenation, perfusion, digestion, elimination and defense are considered. The dynamics of stress, ischemia, edema, and pain are presented. Students analyze physiological problems in-depth as they relate to specific clients.

NUR 551 two credits theory
Scope and Outcomes in Advanced Health Nursing
Prerequisite: NUR 500

The scope, standards, and outcomes of advanced practice nursing. The evolution of advanced practice is considered by examining historical background, current realities, and future directions. Students analyze the role components of expert clinician, educator, consultant, and case manager in the care of adult clients. Standards of practice, development and use of protocols/practice guidelines, and evidence of improved health outcomes are analyzed as mechanisms to promote delivering quality care. Critical thinking, written and oral communication, and therapeutic nursing intervention skill development are emphasized.

NUR 552 one credit theory/
two credits lab/practicum
Advanced Assessment for Primary Care

Establishing a foundation for assessment in primary care through didactic, laboratory modules, and practicum experiences. The emphasis is on health history interviewing, basic physical examination using four modalities, and beginning skill development in differential diagnosis. The course is restricted to the adult including emphasis on gender, racially diverse and aging populations.

NUR 553 three credits
Clinical Pharmacology for Ambulatory Care
Prerequisite: NUR 550

Pharmacological agents used in the prevention, diagnosis, and treatment of human disease and injury in the adult. The focus is on the basis for the clinical use of drug therapy. Characterization, evaluation and comparison of drugs form the framework for this course. Classes of drugs will be critically evaluated in terms of desired effects and degree of tolerable undesired effects. Clinical pharmacological concerns related to aging, drug interactions, and legalities will be addressed.

NUR 556 two credit theory/
three credits practicum
Introduction to Primary Care
Prerequisites: NUR 550, 552, 553

Nursing care of the adult client who is experiencing acute episodic illness within the context of the community setting. The content reflects knowledge necessary for providing primary care services in an ever-changing, ever-evolving health care climate. It will build on the student's knowledge of physical assessment, pathophysiology, pharmacology, and other treatment modalities, emphasizing knowledge and skill of health promotion, screening, maintenance, diagnosis, differential diagnosis, and management of care in collaboration with other health professionals. Nursing care and treatment modalities will be stressed for each patient. Clinical experiences will be with preceptors in a variety of settings.

NUR 562 two credits practicum
Advanced Assessment: Comprehensive Assessment of Older Adults
Pre- or co-requisite: NUR 552

Provides the student with practice opportunity to develop skill in multidimensional comprehensive assessment of a diverse population of older adults. This practicum correlates with content presented in NUR 552, Advanced Assessment for Primary Care. The student will build on previously acquired didactic and laboratory instruction in determining the health and functional status of older adults, and the identification of health and developmental problems. Students will practice under the supervision of a GNP in the discrimination of normative and pathologic aging and indicate the need for follow-up and/or referral to other health care professionals.

NUR 563 two credits theory/
three credits practicum
Health Care Delivery to Older Adults
Prerequisites. NUR 552, 553, 562

The interrelationships of the aging process, psycho-social stressors and life cycle events, chronic illness, and acute illness The practicum allows for the development of necessary skills to assist the older adult and family caregiver in promotion, maintenance, and restoration of health. Advanced assessment is stressed as the foundation of clinical decision making Examination of common health problems of older adults is explored in the context of family and community resources. Emphasis is on analysis of a variety of health care delivery systems and the deployment of resources to meet needs of a diverse population of older adults and families.

NUR 595 variable credit
Independent Study
Prerequisites: Upper-division standing, permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged

NUR 596 variable credit
Directed Study
Prerequisites: Permission of the instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered Conditions and hours to be arranged

NUR 599 two credits
Methods in Community Health
Prerequisite: NUR 540

Introduction to methods used to analyze community health and health services. Methods to analyze and present epidemiological data on public health problems will be studied. Students will learn how to measure quality improvements/outcomes from nursing, government, and consumer perspectives. Students will learn how to run computer software database and statistical programs such as StatView, EpiInfo, and Conquest. Students' critical thinking and decision-making skills are developed through the use of case studies, interactive teaching, seminars, and analysis of current data sets in public health

NUR 610 one credit
Capstone/Thesis Direction

The student works with the major advisor on the conduct and report of the research proposal developed in NUR 511. The completed study will be submitted as a major scholarly product. The report must be acceptable and will be graded P/F; it will not carry a letter grade.

NUR 635 two credits
Clinical Reasoning in Advanced Nursing Practice
Pre- or co-requisite: Second clinical course in selected option

Current theoretical and empirical knowledge relative to critical thinking and clinical decision making Research guided by decision theory, information processing theory and prospect theory will be considered. Several informatic approaches such as expert systems and decision analysis will be examined Ethical considerations will be explored Strategies to improve diagnostic reasoning will be discussed, and students will analyze their own clinical judgments throughout.

NUR 640 three credits
Community Assessment
Prerequisites: NUR 540, 541

Theories of health, nursing, community, and community organization at the population level. Students utilize the theory and principles learned in Biostatistics and Epidemiology to complete a community assessment and identify community health problems. This course will analyze the community's health status and adequacy of resources within socio-cultural, political, legal and ethical frameworks. The role of the nurse as an active participant in community health analysis and diagnosis will be explored. (Replaced by NUR 680 in Spring 1999 and beyond.)

NUR 641 three credits practicum
Community Health Practicum II
Pre- or co-requisite: NUR 640

Synthesis of theories basic to population-centered community nursing. In this clinically-based course, students in mid-level management are assigned to selected subpopulations within a given community. A systematic theoretical analysis of problem identification, solution development, and program evaluation will be emphasized. (Replaced by NUR 682 in Spring 1999 and beyond.)

NUR 643 three credits practicum
Clinical Practicum III
Pre- or co-requisite: NUR 649

Community placement in an official state or local board of health or in a setting that provides services to underserved populations. Students in mid-level management will work with a preceptor who is developing a statewide program of is coordinating the work of several organizations to develop a community-wide program that addresses a local health problem. (Replaced by NUR 684 in Spring 1999 and beyond.)

NUR 647 three credits
Social Pathologies/The New Morbidities

The prevalence and severity of social pathologies. Specific health risk behaviors that lead to increased morbidity and mortality among young adults are examined. Survey instruments that assess health risk behaviors or health status that lead to injuries, tobacco, alcohol and drug use, and sexual behaviors of university populations are evaluated. Violence and its effect on the health status of university populations are explored. Public health nursing strategies designed to reduce health risk behaviors and social pathologies are reviewed or developed. Methods are utilized to promote critical thinking and problem solving skills to decrease social pathologies and health risk behaviors. Group work is emphasized to promote collaboration among health providers in address health problems and methods to reduce/resolve them.

NUR 648 three credits
Strategies for the Health of Selected Populations

The health needs of selected populations, especially HIV infected populations, in schools, the workplace, or home care agencies. Delivery of health care is evaluated and innovative methods to meet health care needs are developed. (Replaced by NUR 681 in Spring 1999 and beyond.)

NUR 649 three credits
Concepts of Community Health Planning
Prerequisites: NUR 640, NUR 641

Methods of organizing the community to develop health care programs for the underserved. Theories of community organization and methods for working across organizations to develop coalitions will be explored. (Replaced by NUR 683 in Spring 1999 and beyond.)

NUR 654 two credits theory/
three credits practicum
Advanced Nursing Management of Illness-Related Phenomena
Prerequisites: NUR 550, NUR 556

The negotiated management of illness-related phenomena occurring along a continuum. Relevant theoretical foundations, expanded clinical knowledge, and complex nursing interventions are explored and further synthesizes into client-based theories and measurable outcome criteria. The practicum focuses on the application of theoretical knowledge and clinical skills within the selected clinical focus. Emphasis is placed on issues related to continuum of care.

NUR 656 three credits theory/three credits practicum
Role Synthesis: Adult Health

The synthesis of advanced knowledge and skills in the management of the adult client. Theoretical knowledge includes examination of issues related to professional practice, client care, health policy, practice models, demonstration projects, research utilization and role socialization. Emphasis is placed on clinical decision-making, management of care across the continuum, and evaluation of outcome criteria. The practicum fosters application of this knowledge in projects designed specific to the selected track.

NUR 658 two credits theory,
four credits practicum
Role Synthesis: Adult Nurse Practitioner

The historical, socio-economic, political, and professional constraints and opportunities influencing the nurse practitioner role. Leadership strategies that support the development and negotiation of this role in the health care system are explored. Policies related to legal aspects of the role are analyzed. Transition to the role is enhanced by further examination of decision-making in primary and continuing care in both the theoretical and practicum component.

NUR 664 two credits theory/
four credits practicum
Advanced Gerontological Nursing Concepts in Health Promotion, Maintenance, and Restoration
Prerequisite: NUR 654

The synthesis of knowledge in the advanced practice role through the diagnosis, treatment, and management of acute and chronic health problems common in a diverse population of older adults. Emphasis is on the application of advanced practice nursing theory and research. Students function in the advanced practice role within a multidisciplinary health care team. A variety of clinical practice sites will be utilized to assist the student in the nursing assessment and management of Pathophysiological alteration that impact function in older adults.

NUR 666 two credits
Advanced Pharmacology in Gerontological Nursing
Prerequisite: NUR 553

Independent and interdependent clinical decision-making in the diagnosis and treatment of common health problems of older adults in a variety of settings. Pharmacological variables specifically related to common aging changes and to pathological conditions are reinforced and pharmacokinetic and pharmacodynamic principles are emphasized in relation to vulnerabilities of older adults of various ethnic and racial groups. Advanced pharmacology related to the treatment of health alterations, prescription writing, legal and ethical ramifications of practice, and protocol development are emphasized.

NUR 668 two credits theory/four credits practicum
Management of Care in Advanced Gerontological Nursing
Prerequisite: NUR 664

A synthesis of knowledge and research in the clinical case management of groups of older adults through collaboration with multidisciplinary health care team members and the deployment of resources in the long-term care continuum. Demonstration of advanced practice leadership role is emphasized in research application, and program development and evaluation. Advanced clinical strategies will be demonstrated to promote, maintain, and restore health to groups of multicultural older adults. The student will act as client advocate in developing and implementing strategies that have a positive effect on systems that affect the health and quality of life of older adults.

NUR 675 three credits
Seminar in Advanced Practice

Individualized clinical assignments and focused seminar discussions to foster the synthesis of advanced knowledge and skills in the development of the advanced practice role. Precepted clinical experiences will be expanded through the exploration of innovative models of advanced practice, research, utilization strategies relating to identified concerns for a specific client population or environment of care, and emphasis on client population or environment of care, and emphasis on client and system outcome measures.

NUR 680 three credits
Community Health Assessment
Prerequisite: NUR 599

Providing knowledge and skills to develop the role of the community/public health nursing specialist. The course presents throughout the core public health functions of assessment, assurance, and policy development, focusing on assessment. Each student will assess a community, identifying the strengths, weaknesses, stressors, and adaptations of aggregates and communities. Principles of epidemiology, demography, environmental sciences, and political theory will be synthesized with nursing concepts to provide the basis for community nursing practice in a dynamic health delivery system. (New for Spring 1999; replacing NUR 640.)

NUR 681 three credits
Community Health Nursing II
Prerequisites: NUR 541 and 599

Study of methods of health planning through development of program plans that address identified health care problems in the region, with special emphasis on needs of the underserved, cultural variations in health practices, and cost effectiveness. The course explores theories of community organization and coalition development and generation of health programs that incorporate latest research findings. Evaluation plans will be developed to measure outcomes. Legislative, executive, and regulatory branches of government will be examined to understand their roles in assessing problems, planning, implementing, and evaluating health programs; funding sources for programs will also be explored. (New for Spring 1999; replacing NUR 648.)

NUR 682 three credits practicum
Community Health Nursing II Practicum
Pre- or co-requisites: NUR 680 and 681

The student will utilize principles of social change, community organization, planning, and evaluation to develop effective community nursing programs. Working within a community framework, the student will develop a community project as an intervention for a previously identified community health problem. (New for Spring 1999; replacing NUR 641.)

NUR 683 three credits
Community Health Nursing III
Prerequisite: NUR 682

Effective advanced practice in community health nursing, through a theoretical basis to support the role of community health nursing in program evaluation and quality management. The student will analyze critically existing taxonomies and databases to determine their effectiveness for measuring outcomes. Students will gain evaluation research skills through analysis of existing nursing programs and will refine those skills by identifying variables that have the potential to improve the effectiveness of community health nursing programs. (New for Spring 1999; replacing NUR 649.) .

NUR 684 three credits practicum
Community Health Nursing III Practicum
Co-requisite: NUR 683

Application of evaluation skills to enhance the role of quality management in public health/community health nursing. The major focus will be on measurement of outcomes, quality management, and cost effectiveness. The students will identify and evaluate a community program, identify critical variables, and create or analyze a database to promote measurement of qualify and effectiveness. The practicum utilizes computer skills throughout. (New for Spring 1999; replacing NUR 643.)

College of Visual and Performing Arts

The College of Visual and Performing Arts is a comprehensive arts college with Bachelor's and Master's programs that prepare students for careers in the arts. To assure that its programs meet appropriate standards, the University of Massachusetts Dartmouth is an accredited institutional member of the National Association of Schools of Art and Design, the national accrediting body for the visual arts.

Undergraduate students in the college may choose concentrations from a broad spectrum of the arts, all of which provide a framework for developing a high degree of professional competence and pursuing individual creative goals. Essential to this framework are the academic programs and resources of the whole university. Students of Visual Design may select *Graphic Design/Letterform, Illustration, Photographic/Electronic Imaging, Ceramics,* or *Jewelry/Metals* and receive a Bachelor of Fine Arts in Visual Design. Alternatively, students may pursue Bachelor of Fine Arts degrees in *Art Education, Painting, Sculpture,* or *Textile Design/Fiber Arts;* or a Bachelor of Arts degree in *Art History* or in *Music*. The college also offers courses in *Theater.*

The facilities and equipment on the Dartmouth and New Bedford campuses are a source of pride for our students and faculty, and are among the finest in New England. Visits by applicants are encouraged. Individual attention is also emphasized. Students are encouraged to consult with the Foundation advisors, departmental advisers, the Chairs, and the Dean about choosing programs and options and on matters concerning their progress at the university.

Admission to the Undergraduate Major Programs in Studio Art
All applicants for admission submit an art portfolio. This requirement is summarized below. Specific instructions are given in the *Admissions Bulletin*.

New freshman applicants are encouraged to seek admission to the college's studio art programs as "Studio Art Unspecified" majors. During the Foundation Year they will have an opportunity to select specific areas of specialization in consultation with an advisor.

Transfer students are admitted into specific majors only. They will present an art portfolio as an element in the department's admission decision and to aid in the evaluation of their previous work for transfer credit at UMass Dartmouth. They will also be asked to identify a preferred option, such as "Graphic Design/Letterform" or "Ceramics," if their major of choice offers options.

Transfer students who wish to be admitted into courses above the sophomore level must bring a portfolio to transfer orientation. Acceptance into advanced courses is rare, not automatic.

Art Portfolio
Submission of a portfolio is required. In order to understand an applicant's ability and preparation, faculty members will review a portfolio. We recognize that a portfolio is not a precise measure of potential and that our applicants come to us with varying amounts of previous art instruction. Space in the art programs is limited; it is strongly recommended that you submit your application together with your portfolio before March 15.

A portfolio should consist of fifteen 35mm slides presented in an 8 1/2" by 11" plastic file sheet. The faculty is especially interested in seeing drawing from direct observation. Slides should have labels with the applicant's name and the size, medium, and date of completion of the work; a dot in the lower left hand corner; and numbers. The numbers should correspond to a list which includes information that will be useful in understanding the work (e.g., descriptions of the assignments, concepts, or processes). Please enclose a stamped envelope with enough postage so that we may return your portfolio.

Music Audition
An audition is required of applicants to the music program. The Department of Music and the Office of Admissions will arrange a convenient time with applicants.

Changing to a Studio Art major
Students requesting a change of major into one of the studio arts majors/options are expected to provide a portfolio of slides along with the change of major request form.

Advanced Placement
Credit for advanced placement courses will be awarded if grades of 3 or above (on a 1-5 scale) have been achieved in courses which have UMass Dartmouth equivalents. The department will determine whether this credit will be given toward elective or major requirements.

Course Prerequisites
Many programs in the College of Visual and Performing Arts are sequential, building knowledge and skills step-by-step. Course prerequisites, which assure that essential knowledge has been achieved, are identified in the course descriptions found in this catalogue. Normally, courses are offered only once each year; therefore, students entering the college at mid-year should be aware that they may have to wait until the following semester to meet a prerequisite.

Studio Credit/Class Hour Requirements
Studio art courses require three hours of work per week for each hour of credit. In most studio art courses, two hours per credit a week are scheduled in class, and the third hour is the individual student's responsibility to complete.

Cumulative Average
To be eligible to graduate, a student must achieve at least a 2.0 cumulative average (C) for the entire program with a minimum of 2.0 in identified key courses in the major field of study, as identified in subsequent sections of the catalogue.

Retention of Student Work
The College of Visual and Performing Arts reserves the right to retain examples of student class work for teaching and exhibition purposes.

Accreditation

The University of Massachusetts Dartmouth is an accredited institutional member of the National Association of Schools of Art and Design.

Graduate Programs

The college offers graduate programs leading to the Master of Fine Arts in Artisanry, the Master of Fine Arts in Fine Arts, the Master of Fine Arts in Visual Design, and the Master of Art Education. The MFAs in Artisanry, Fine Arts, and Visual Design are professionally oriented and develop the abilities and interests of each student toward the broad goal of advanced professional practice. The Master's in Art Education has components for in-service art teachers, fine arts degree holders, and continuing education students. See the *Graduate Catalogue* for information.

Foundation Program

Required of All Majors
(except Art History and Music)

Gen Ed Key

C Cultural and Artistic Literacy

Foundation Courses

Marc St. Pierre, Director

The foundation program at the College of Visual and Performing arts is a rigorous program designed to promote creativity and develop in the young artist an understanding of the visual language. Emphasis is placed on developing drawing skills through organic and inorganic subject matter, refining abilities in working with two- and three-dimensional design problems, and identifying professional interests. The foundation courses (at the 100 level) are required for all visual arts majors and are a prerequisite for all 200- or higher-level courses in Fine Arts, Textile Design/Fiber Arts, Visual Design, and Art Education. Two Art History courses, ARH 102 Renaissance to Modern Art and ARH 103 Development of Modern Art, are also required, and together with ARH 101 Ancient and Medieval Art (scheduled for the second year), they provide an historical survey of the art of the Western world.

FOU 101 one credit **C**
Visual Arts Colloquium I
1.25 lecture hours

A forum for faculty and visual artists to present current topics in the arts to new visual art students. It serves as an introduction to the resources of the College of Visual and Performing Arts and the University. In addition, the Colloquium hosts cultural events, providing opportunities for community activities for the CVPA.

FOU 102 one credit **C**
Visual Arts Colloquium II
1.25 lecture hours

Continuation of FOU 101.

FOU 110 three credits **C**
Foundation: Structural Drawing

One of two courses that introduce students to the comprehensive visual language of drawing. Various projects and presentations expose students to numerous drawing approaches, including ways of structuring the picture plane, establishing proportion, creating believable space with linear perspective, and modeling form with shading. Students will apply these skills to idea generation, form development, experimental variations on a design, investigative studies of creative problem solving, and expressions of movement and spatial illusion. Students are also introduced to the processes involved in planning, researching, and actualizing a major drawing project. Critiques and lectures will help students develop an understanding of the critical issues of drawing and of its context within the history of art.

FOU 112 three credits **C**
Foundation Life Drawing

A studio course that introduces students to fundamental drawing principles. The advancement of observational skills is the primary concern, as it plays a major role in preparing students for subsequent study in the visual arts. Assignments develop abilities in the two-dimensional representation of form and space. In addition, students are introduced to the historical spectrum of drawing through lectures and demonstrations. Through intensive study of the figure, students are provided with a basis for artistic and cultural tradition. The human form, the most enduring theme of western art, has been used by artists throughout history to express their interpretations of the world.

FOU 114 two credits **C**
2D Workshop

To develop a critical understanding of basic two dimensional design, students explore the processes of idea generation, research, and organization of fundamental visual principles. Comprehension is facilitated by direct implementation in a single medium. Students pursue the development of visual principles in one of the following studio areas: painting, photography, printmaking or textile design. The studio dynamics allow for intense interactions with faculty and fellow students, as well as the enhancement of critical and creative problem solving. Emphasis is placed on constructive critical analysis, visual perception, and the relationship between sensory and reasoning activities.

FOU 115 two credits **C**
Visual Language

Studio course that explores two dimensional form at a fundamental level. Assignments develop skills in composition, color theory, figure and ground, proportion, contrast and scale. In addition, attention to craftsmanship in various media, such as drawing, painting, photography and collage, develop patience, concentration, and the necessary work ethic for all forms of visual communication. A fundamental goal for this course is to investigate the communicative power of art. Lectures and presentations, coordinated with other disciplines such as Art History and English, develop students' critical awareness of visual arts' potential to inform and influence its audiences.

FOU 124 two credits **C**
3D Concepts

Promotes the discovery and understanding of the third dimension through the manipulation of materials. Students develop creative problem solving abilities by conducting research, generating ideas, developing working drawings and plans, and constructing three dimensional objects. This course advances visual sensitivity, accurate analysis of process, and a basic proficiency in the processes of carving, modeling, casting, and assemblage.

FOU 125 two credits **C**
3D Workshop

Utilizes the tactile, physical and visual richness of three dimensional discipline areas to explore object making and related

All studios meet two hours weekly for each credit offered.

processes. Students will explore basic design in one of the following studio areas: ceramics, metals, sculpture or wood. The limited class sizes provide significant contact between faculty and students, and the inclusion in a studio community provides exposure to creative problem solving techniques and innovations used by advanced students. This course strives to help students develop an awareness of what is meaningful and of personal interest to them, promoting idea generation and self confidence.

ARH 125 three credits **C**
Studies in Visual Culture: Renaissance to Modern Art
3 lecture hours

Surveys painting, sculpture, and architecture from the Renaissance to Impressionism. FOU 125 and 150 need not be taken in sequence. (Formerly ARH 102)

ARH 150 three credits **C**
Studies in Visual Culture: Modern to Contemporary Art
3 lecture hours

Surveys developments in painting and sculpture from the late 19th century to World War II. The historical context of major artists and the theoretical, critical and aesthetic issues surrounding their works will be discussed. (Formerly ARH 103)

ARH 200 three credits **C**
Studies in Visual Culture: Ancient, Medieval, and World Art
3 lecture hours
Prerequisites: ARH 125, 150; or permission of instructor

Exploration of the critical relationships between art/architecture and its social, political, and economic contexts. The course presents the art object as a cultural artifact which expresses specific values of the time and space in which created. The course thus transcends identification and chronology of objects of art, to ask: Why was a work of art made? Students will attain an intellectual and visual understanding of significant themes and issues of Ancient, Medieval, and World Art; will think and write critically about social, economic, political, and/or religious structures that influence and formulate visual art traditions; and will gain in-depth knowledge on a specific artist, art period, or theoretical problem through an extended research project. (Formerly ARH 101)

Certificate in Artisanry

The Certificate in Artisanry is a 36 credit credential awarded by the College of Visual and Performing Arts, UMass Dartmouth, upon completion of study centered on the development of skills and concepts in the craft areas. Participating programs in Artisanry include Textile Design/Fiber Arts, Jewelry/Metals, Ceramics, and Wood/ Furniture Design.

It is expected that students who complete the Certificate Program will have gained mastery of specific technical skills in one or more craft areas, knowledge of current trends and various historical precedents of that media area, and a direction for future work, and acquaintance with the professional paths available to them.

Up to 18 credits may be met through transfer of prior educational experience, which can include credits from an accredited institution of higher learning or experience gained in workshop(s) that awarded no formal credit, e.g., Haystack, Arrowmont, Penland, or centers of learning in foreign countries.

At least 18 credits, including part of the introductory studio requirement, all intermediate and advanced level studio requirements in the student's chosen field, and the adjunct Artisanry studio course requirement must be taken in residence at UMass Dartmouth.

Certificate students are integrated into regularly scheduled undergraduate classes. They are expected to perform on a similar technical and aesthetic level, and must be willing to work within the established curriculum and semester schedule of class meetings, projects, field trips, critiques, and student exhibitions. Certificate course requirements may be completed on a full-time or part-time schedule.

Student Profile
The Certificate student will enroll in a series of studio and academic courses to develop appropriate technical skills and a personal aesthetic for sustained professional work. Certificate students work alongside BFA and sometimes MFA degree students and are expected to perform on similar technical and creative levels. This program is designed to include the following students:

- second degree art/design students wishing to pursue experience in one or more craft areas as an adjunct to their prior arts education,
- art/design professionals wanting to retrain, augment, or update their skills and creative directions,
- second career students with personally gained skills in the crafts but little or no previous formal arts education,
- those for whom the existing degrees offered by the University are not deemed necessary or feasible.

Application Procedure
Persons interested in applying to the Artisanry Certificate program write to the Dean of the College of Visual and Performing Arts requesting admission to the program. Applicants should

- indicate which subject they wish to pursue and their goals in pursuing the Certificate,
- enclose transcripts of all undergraduate work completed and records of related non-credit experience at recognized national workshops,
- enclose at least 10 slides of their art work, and
- enclose a self-addressed, stamped envelope if they wish their slides to be returned by mail.

The Dean's Office will forward applications to the faculty in the appropriate subject areas for their recommendation. Faculty may request an interview with the applicant. Recommendations are due to the Dean within two weeks of receipt of the applicant's materials.

Paying careful attention to the recommendation of the faculty, the Dean of the college will decide whether to admit the applicant to the program. The Dean will notify the applicant of the decision. The Dean will send the files of admitted students to the Office of University Records for a non-degree student file to be created. Because Certificate students are placed in regularly scheduled classes, admission to a specific area will also be based on the availability of space.

If an applicant is judged to be insufficiently prepared in technical areas or lacks clear focus but is judged to have potential for learning and personal growth, the applicant may be asked to enroll in one or more courses as a non-certificate special student prior to making formal application to the Certificate Program.

Registration for Certificate students will take place after the close of the registration period for degree students.

Course and Credit Requirements
Students in the Artisanry Certificate Program are required to take the following sequence of courses. If proof of prior credits earned is provided through transcripts, several courses and credits may be waived at the discretion of the faculty. Courses for which transfer credit is allowed are noted below.

Courses	*Credits*
Intro. Studio (e.g., Ceramics 1, 2) 3 transfer credits allowed, e.g., Ceramics 1	6
Interm. Studio (e.g., Ceramics 3, 4)	6
Adv. Studio (e.g., Ceramics 5, 6)	3
Adjunct Artisanry Studio Elective (e.g., Weaving 1)	3
Drawing, Foundation Design, or Color Studio 3 transfer credits allowed	3
Art History Electives 6 transfer credits allowed	6
English Lit. or Composition Electives 6 transfer credits allowed	6
Total for Certificate in Artisanry	36

Certificate in Fine Arts

The Certificate in Fine Arts is a 36 credit credential awarded by the College of Visual and Performing Arts at UMass Dartmouth. This interdisciplinary pro-gram centers on development of skills and concepts in the areas of Drawing, Painting, Printmaking, and Sculpture.

It is expected that students who complete the Certificate Program will have gained mastery of certain specific technical skills in one or more areas, an awareness of current trends and various historical precedents of that media area, and an understanding of their own focus and the professional paths available to them.

A maximum of 15 of the credit requirements can be met through transfer of prior educational experience, which can include advanced prior learning at a recognized institution or workshop venue where no formal university credit was available, i.e., Haystack, Arrow-mont, Penland, Vermont Studio School, Skowhegan, or a center of learning in foreign countries.

At least 18 credits, including part of the introductory studio requirement, all intermediate and advanced level studio requirements in the student's chosen field, and the adjunct Fine Arts studio course requirement must be taken in residence at UMass Dartmouth.

Certificate students will be integrated into regularly scheduled undergraduate classes. They will be expected to perform on a similar technical and aesthetic level, and must be willing to work within the established curriculum and semester schedule of class meetings, projects, field trips, critiques, and student exhibitions. Certificate course requirements may be completed on a full-time or a part-time schedule.

Student Profile
The certificate student will enroll in a series of studio and academic courses to develop appropriate technical skills and a personal aesthetic for sustained professional work. Certificate Program students work alongside BFA degree students and are expected to perform on similar technical and creative levels. The program is designed to include the following students:

- second degree art/design students wishing to pursue experience in one or more areas of the Fine Arts as an adjunct to their prior arts education,
- art/design professionals wanting to retrain, augment, or update their skills and creative directions,
- second career students with personally gained skills in Fine Arts but little or no previous formal arts education,
- those for whom the existing degrees offered by the University are not deemed necessary or feasible,
- art educators who wish to return to a learning environment and develop their skills in the Fine Arts.

Application Procedure
Persons interested in applying to the Fine Arts Certificate program write to the Dean of the College of Visual and Performing Arts requesting admission to the program. Applicants should

- indicate which subject they wish to pursue and their goals in pursuing the Certificate,
- enclose transcripts of all undergraduate work completed and records of related non-credit experience at recognized national workshops,
- enclose at least 10 slides of their art work, and
- enclose a self-addressed, stamped envelope if they wish their slides to be returned by mail.

The Dean's Office will forward applications to the faculty in the appropriate subject areas for their recommendation. Faculty may request an interview with the applicant. Recommendations are due to the Dean within two weeks of receipt of the applicant's materials.

Paying careful attention to the recommendation of the faculty, the Dean of the college will decide whether to admit the applicant to the program. The Dean will notify the applicant of the decision. The Dean will send the files of admitted students to the Office of University Records for a non-degree student file to be created. Because Certificate students are placed in regularly scheduled classes, admission to a specific area will also be based on the availability of space.

If an applicant is judged to be insufficiently prepared in technical areas or lacks clear focus but is judged to have potential for learning and personal growth, the applicant may be asked to enroll in one or more courses as a non-certificate special student prior to making formal application to the Certificate Program.

Registration for Certificate students will take place after the close of the registration period for degree students.

Course and Credit Requirements
Students in the Fine Arts Certificate Program will be required to take the following sequence of courses. If proof of prior credits earned is provided through transcripts, several courses and credits can be waived at the discretion of the faculty. Courses for which trans-fer credit is allowed are noted below.

Courses	*Credits*
Introductory Studio (200-level course in chosen area) 3 transfer credits allowed, e.g., Sculpture 1 or Painting 1	6
Intermediate Studio (300-level course in chosen area)	6
Advanced Studio (400-level course in chosen area)	6
Drawing, 300 level. Students who have made drawing their chosen area will take 6 credits in another area, e.g., Painting, Printmaking 3 transfer credits allowed	3
Art History Electives 6 transfer credits allowed	6
English Lit. or Composition Electives 6 transfer credits allowed	6
Total for Certificate in Fine Arts	36

Art Education

Faculty and Fields of Interest

The Art Education program provides a sequence of practical, theoretical and studio-based experiences leading to proficiency in the teaching of art. The scope of the program permits the student to work in public or private school systems or in other private and public agencies. The program emphasizes both supervised field work in surrounding communities and university courses in the theory and practice of art and education. All courses, except Senior Seminar and Student Teaching, are open to all students in the University community.

Certification in art education is the goal of most art education majors. Students wishing certification should consult with the department chairperson. Certification may also be earned by students who already possess the bachelor's degree and are interested in earning an MAE degree.

Students exploring certification options are advised also to consult the programs of the university's Department of Education.

Peter London (chairperson) art education, painting, art therapy

Arlene B. Mollo art education, painting and design

Dante Vena art education, printmaking, drawing and painting

Art Education Major BFA degree

Various choices are presented in the curriculum shown here, and further substitutions are possible with the approval of the Art Education chairperson. Art Education students complete a concentration in one of the studio areas in the College of Visual and Performing Arts. The studio concentration may be in Painting, Graphic Design, or Textile Design. Upon consultation with the Art Education chairperson, a program of studio electives can be designed in other areas, such as Crafts, Art History, Sculpture, 2-D work. Students interested in Art Therapy can design a concentration in that area in consultation with the Art Education chairperson.

Students must choose to pursue either the elementary (N-9) or the secondary (5-12) teaching certificate. The appropriate Art Education courses must be selected depending upon the level of certification sought, in consultation with the Art Education chairperson, prior to class registration each semester. A positive recommendation by the Department Chairperson permits the student to do his/her student teaching (Practicum). Students are advised to see the Chairperson of the Department at the beginning of their senior year to arrange their Practicum.

Requirements

		Semester Credits	
	First Year	**First**	**Second**
FOU 101, 102	Visual Arts Colloquium	1	1
FOU 110, 112	Foundation: Structural/Life Drawing	3	3
FOU 114, 115	2D Workshop/Visual Language	2	2
FOU 124, 125	3D Concepts/3D Workshopsl	2	2
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 150	Visual Culture: Modern to Contemporary Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Social Science Electives*	3	3
		17	**17**
Second Year			
AED 200	Observational Strategies in Artistic Dev.	3	
AED 215	Special Needs: Current Issues	3	
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
	Art History Elective		3
FIA 221, 222	Figure Drawing I, II	3	3
	CVPA Elective		3
	CVPA Studio Concentration**	3	3
	Literature Electives***	3	3
		18	**18**
Third Year			
AED 300	Methods and Materials	3	
AED 310	Curriculum Design		3
	Art Education Elective	3	
	CVPA Electives		6
	CVPA Studio Concentration**	3	3
	Science Electives	3	3
	Mathematics Elective	3	
		15	**15**
Fourth Year			
AED 405	Social Philosophy and History of Art Education	3	
	CVPA Electives	6	
	CVPA Studio Concentration**	3	
	Humanities Electives***	3	3
AED 411	Practicum/Seminar: Elementary N-9 **OR**		
AED 412	Practicum/Seminar: Secondary 5-12		12
		15	**15**
	Total credits:		**130**

Note: The BFA degree with a major in Art Education is awarded upon satisfactory completion of all requirements as described herein. Teacher certification as an Art Specialist is granted upon satisfactory completion as well of the Massachusetts Teacher Tests.

* Choose either EDU 205 Human Development or PSY 201 Child Psychology. Students must select electives in such a way as also to satisfy their general education requirements in diversity and ethics.

** The Studio Concentration requirement consists of 15 credits of sequential study (sophomore, junior, and senior year studio courses) in one of the major studio areas of the College of Visual and Performing Arts.

*** As one Humanities elective, choose EDU 201 Philosophy of Education. In Art Education, Humanities electives include Art History, English, Foreign Language, Litrerature, History, Music, and Philosophy courses. Students must select electives in such a way as also to satisfy their general education requirements in diversity and ethics.

Art Teacher Certification Program

Those who already possess a bachelor's degree and wish to return to school to receive art teacher certification may apply for acceptance to the teacher certification program through the MAE degree. Those who are in another bachelor's degree program and are considering art teacher certification should transfer into Art Education beginning with the sophomore year and select a level of certification: grades N-9 (Elementary) or 5-12 (Secondary). This post-baccalaureate program has the approval of the Bureau of Teacher Certification, Massachusetts Department of Education, to lead to a single level permanent certification in Massachusetts as an art teacher in grades N-9 or 5-12. As an added benefit, interstate recognition makes art teacher certification earned at UMass Dartmouth reciprocally valid in many other states.

This program is designed for students with already strong backgrounds in studio work who want certification which allows them to work in schools, museums, or social service agencies. Candidates for teacher certification must demonstrate studio competencies in areas specified by the State Department of Education Standard I prior to applying for the state teaching certificate. While at UMass Dartmouth, certificate students take courses from the listed requirements for the major in Art Education that apply toward state certification standards, including courses in studio art, the social theory and philosophy of education, human development and learning of art, and teaching methodology. During their required field experience, students will visit schools and other learning sites. The courses and field work provide students with the opportunity and skills to develop effective strategies for work with learners in a variety of settings.

During their required pre-practicum field experience, students need to select the grade level (N-9 or 5-12) in private or public schools in which they are assisting or teaching students. Students must acquire a total of seventy five hours.

The full program requires 27 credits, and additional credits may be needed if a certificate student lacks prerequisites or depth of studio preparation.

The Commonwealth of Massachusetts has adopted to a new teacher certification process. The one-stage Life-time Certificate is now replaced by a two-stage process in which a Provisional Certificate is earned, followed by a Full Certificate. Students who complete the Art Education program will earn the Advanced Provisional Certificate in either N-9 or 5-12. Within five years earning "Advanced Provisional" Certificate, teachers must earn a Full Certificate in order to maintain professional standing and teach in the public schools.

All candidates for teaching certification in the State of Massachusetts must take and pass a teaching examination administered by the Bureau of Teacher Certification, beginning with the class of 1998. The test is in two parts—command of the discipline of knowledge (art history, aesthetics, and art education) and general literacy.

A Master's degree that includes clinical experience and education coursework is required for Full Certification. The department will be offering this degree through its Art Education graduate program, including coursework and experience designed to enable students to qualify for full Certification. Those interested should consult the department about the Art Education master's degree options, and consult the university's *Graduate Catalogue*.

AED 200 three credits **C**
Observational Strategies in Artistic Development

Field-based pre-practicum opportunities for students to conduct and assess observations of learners and teachers. Students will record, interpret, and analyze behavior in written and video form. Emphasis is placed on expanding the student's view of the relationship between the environment, developmental stages, and learning objectives. (Formerly titled *Development of Visual Symbols*)

AED 215 three credits **C**
Special Needs: Current Issues

Introduction to the visual arts as a therapeutic instrument, examined through practical experiences, discussions, and readings. The course explores art's potential in the physical therapies, diagnosis, affective and cognitive therapies, explores the variety of special needs students, and discuss current issues and literature. An important goal is to promote understanding in dealing with special needs students in grades N-9 and 5-12.

AED 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

AED 300 three credits
Methods and Materials: Curriculum Methods in Art Education

Experimental uses of materials and methods and their didactic implications. This course seeks to develop skills in designing curricula for varied age groups which focus on the expressive range of each media. Students will meet for a studio-based session to explore alternative media and techniques, followed by a second session in which studio majors pursue the ideas to create art objects and art education majors pursue the ideas to design lessons and units with which these same ideas may be taught to others. In accordance with the Massachusetts Department of Education, students seeking teaching

Gen Ed Note

All Art Education courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.

certification in either N-9 or 5-12 will have readings and field practicum specifically to that age range.

AED 310 three credits
Curriculum Design

Development of curriculum units in the visual arts applicable to educational settings in public schools as well as other selected institutions. From a basis in understanding the broad goals of art education, students plan appropriate learning experiences. Curricula will be designed based upon traditional concepts and principles of art in a context of human development, physical and social environment, and aesthetics. In accordance with the recommendations of the Massachusetts Department of Education, students seeking teaching certification in either N-9 or 5-12 will have readings and field practicum specifically to that age range.

AED 405 three credits
Social Philosophy and History of Art Education

Relationships between philosophical influences and historical practices in art education. Writings by Dewey, Read, Langer, and Broudy provide a philosophical framework for analysis of theories by Cizek, Lowenfeld, Eisner, and Gardner. Their theories will be set in a social context in order to describe how the general period and the specific history of each author shaped that individual's thinking. Comparative historical interpretations by Gaitskill, Effland, and Korzenik will also be explored.

AED 411 twelve credits
Practicum/Seminar: Elementary
Prerequisite: Departmental approval

Practicum experience for which the student is assigned to a school corresponding as much as possible with the student's own interests. Working with and supported by a cooperating teacher and supervisor from the University, the student is afforded the opportunity to conduct art experiences under actual classroom conditions and responsibilities. This practicum is a fifteen-week, full-time classroom experience at the elementary level N-9. A weekly seminar will be held at school sites for the student teachers to share insights and problems. (Formerly titled *Student Teaching K-9*, for 9 credits)

AED 412 twelve credits
Practicum/Seminar: Secondary
Prerequisite: Departmental approval

Practicum providing a fifteen-week, full-time classroom experience under the direction of a university supervisor and working with and supported by a cooperating teacher. The student teacher is afforded the opportunity to conduct art experiences under actual classroom conditions and responsibilities at the secondary level 5-12. A weekly seminar will be held at school sites for the students teachers to share insights and problems about their practicum. (Formerly titled *Student Teaching 5-12*, for 9 credits)

AED 413 one credit
Children's Art Workshop

Provides practical experience with children ages 6-12 on Saturday mornings in the Art Education rooms. The teaching of the workshop will be based on a humanistic approach to art education and must be taken simultaneously with AED 400.

AED 435 three credits
Art, Artists, Aging, and Enjoyment
Prerequisite: 200-300 level courses in Art/Art Education or 12 or more credits in Gerontology courses, or GRT 310

Art history as it relates to the careers of older artists; the representation of age in art; the design of art programs of use to elders and a review and practice of appropriate media will be presented in a combined lecture and studio format.

AED 460 three credits
Arts for the Elementary Classroom

Students preparing to teach grades K-6 will learn how to integrate art into the curriculum. Methodologies, media, and techniques will be explored to help the classroom teacher who is not an arts specialist extend and integrate art lessons.

AED 470 three credits
Special Topics in Art Education

Offered as needed to present advanced material to advanced under-graduate students. The specific tops is stated when the course is scheduled. May be repeated with change of content.

AED 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

AED 196, 296, 396, 496 variable credit
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Graduate Courses in Art Education

Note: Some graduate courses may be open to undergraduates. Please consult your department chairperson. See the *Graduate Catalogue* for graduate general and program requirements.

AED 517 three credits
Drawing from Nature

Unlike other nature drawing courses which seek to portray the look of the natural object, this course devotes itself to examining and portraying the rhythms of natural things: seas, trees, skies. Students draw and paint the forces acting on things which consequently shape them and animate them, exposing therefore their life force.

AED 527 three credits
Drawing from Within

Introduction to the idea of art-making as transformation. Objectives are to help participants uncover and release subconscious, intuitive dimensions and draw upon memories, aspirations, and fantasies as sources of visual expression.

AED 530 three credits
(nine credits maximum)
Graduate Studio

Graduate studio work on a tutorial basis, with a required final show. The student may work in any medium providing s/he has shown a sufficient portfolio of work indicating real promise for independent study. The student must identify a faculty member who will supervise the project and provide space and equipment.

AED 533 three credits
Arts Leadership and Administration

Examination of management issues such as communication, accountability, research and planning, budgeting, staffing, and information systems. Students conduct field research and develop a project in conjunction with an agency, school, or non-profit organization.

AED 534 three credits
Funding for the Arts

Should the government support the arts? Should funding be decentralized? Does the private citizen, artist, or audience have the right to set standards? What are the boundaries of censorship? These and other normative questions will be explored through readings and discussion. Each student will select a topic and develop a field case study.

AED 535 three credits
Art, Artists, Aging, and Enjoyment

Careers of older artists in history; representation of age in art; design of art programs of use to elders; and review and practice of appropriate media. This course combines lecture and studio formats.

AED 541 three credits
Research: Current Issues

Research techniques and methodologies in arts education, including historical inquiry, empirical investigations, and ethnographic research. Topics include problem definition, research design, data collection and analysis, and methods of presenting findings. Students explore and research current issues of importance to art education and related fields.

AED 560 three credits
Arts for the Elementary School

Integrating art into the N-6 curriculum. Students create curricula that integrate art with other subjects. The class explores methodologies, media, and techniques to help the classroom teacher who is not an arts specialist extend and integrate art lessons.

AED 570 three credits
Special Topic in Art Education

The specific topic is stated when the course is scheduled. May be repeated with change of topic. May be offered in lecture or seminar format. Examples of topics offered recently are Integrated Arts, Gerontology, and ARTSLINKS: Interdisciplinary Curriculum Design.

AED 595 variable credit
Independent Study
Prerequisites: Permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

AED 596 variable credit
Directed Study
Prerequisites: Permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

AED 616 three credits (six credits maximum)
Clinical Experience—Elementary

Provides a one-year clinical experience during which interns are supervised while learning to mesh effectively theory and practice. Each semester's group of student teachers, joined by their cooperating teachers, will come together for seminars. This course will satisfy both an MAE requirement and the student-teaching requirement for certification; in the latter case, students will spend at least 300 hours across 15 weeks in their clinical placements.

AED 617 three credits (six credits maximum)
Clinical Experience—Secondary

Provides a one-year clinical experience during which interns are supervised while learning to mesh effectively theory and practice. Each semester's group of student teachers, joined by their cooperating teachers, will come together for seminars. This course will satisfy both an MAE requirement and the student-teaching requirement for certification; in the latter case, students will spend at least 300 hours across 15 weeks in their clinical placements.

AED 618 three credits
Partnership
Prerequisite: AED 617 or 616

A collaboration between regional schools and the Art Education Department that provides graduate students opportunities to work with teachers in the profession and college faculty to design, present, and improve school-based experiences by creating and implementing new program models. Through workshops, sharing, modeling, reflection, and research, graduate students will grow professionally.

AED 640 three credits
Advanced Research Practice—Theoretical or Applied
Prerequisite: AED 541

Theoretical or Applied Advanced Research Project, in which the student presents a Final Paper or Project. Graded A-F.

AED 641 three credits
Advanced Research Practice—Practice/Studio
Prerequisite: AED 541

Practice/Studio Advanced Research Project, in which the student presents a Final Visual Project or Exhibition. Graded A-F.

Art History

In its choice of objects and methods, Art History is allied to the liberal arts. It examines ancient to contemporary art and artifacts, including architecture, sculpture, painting, graphics, and crafts, from western and non-western cultures. By studying individual and material contributions, as well as those political, social, cultural, spiritual, and intellectual events that have accompanied the creation of art and civilizations, the educated person may more fully understand and assess critically the visual products of past and present cultures.

The Art History curriculum provides its majors with a broad understanding of the major periods and areas of art history, acquaints them with various methods and theories of art historical study, and allows concentration on topics and periods of the student's choosing. In addition, the major offers opportunities to propose and carry out research projects and to work in arts institutions.

Art History majors develop advanced writing skills as well as verbal and visual analytical abilities. Achieving an Art History degree endows one with a life-long critical tool. Graduates enter the job market with skills equivalent to their counterparts' in the Liberal Arts, and they have the added advantage of visual critical abilities. The major also provides the intellectual training for students wishing to prepare for advanced work in one of the specialized areas of Art History or in a related field.

Faculty and Fields of Interest

Lasse B. Antonsen gallery director, modern and contemporary art

Magali M. Carrera (chairperson) ancient Mexico and Peru and traditional art of Africa, America, and Oceania

Liana Cheney renaissance, baroque art (visiting from UMass Lowell)

Memory Holloway modern and contemporary art

Thomas W. Puryear medieval art and American and early modern architecture

Michael D. Taylor medieval and renaissance art

Art History Minor

The Minor in Art History is designed to allow students who have selected another major area of study but who elect to pursue Art History beyond the introductory level to be so recognized by the department and the university. Because Art History impinges closely upon a variety of other humanistic disciplines, the complementary nature of the coursework selected by students outside the Art History major is more readily formalized by the Minor in Art History.

Admission to the Minor

Any student who has earned at least 54 university credits with a cumulative GPA of 2.0 and a 2.5 GPA in his or her major may request admission to the Art History Minor. Permission may be granted by the Chairperson, provided such request is made in writing, at any time before graduation. Forms are available from the registrar.

Requirements

- At least 21 hours in Art History (designated by the prefix ARH), at least 12 of which must be above the 100 level and three credits of which must be at the 400 level in Seminar.
- Students must maintain a 2.0 GPA in all Art History courses.

Art History Major BA Degree

Requirements

		Semester Credits	
		First	**Second**
First Year			
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 103	Visual Culture: Modern to Contemporary Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Foreign Language, 100-level	3	3
	History or Philosophy Electives	3	3
	Science Electives	3	3
		15	**15**
Second Year			
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
	Art History Electives		6
	Literature Electives	3	3
	Foreign Language, 200-level	3	3
	History or Philosophy Elective	3	
	Social Science Electives	3	3
		15	**15**
Third Year			
	Art History Electives	6	6
	Studio Art Elective		3
	Free Electives	3	3
	Social Science Electives	3	3
	Mathematics	3	
		15	**15**
Fourth Year			
	Art History Electives	3	3
	Art History Seminar		3
	Free Electives	12	9
		15	**15**
	Total credits:		**120**

Among the Art History major requirements, one Art History elective must be taken in a non-western area and one 400-level Art History seminar is required.

Students graduating in 2002 or later are subject to the university's General Education requirement. They, and others graduating sooner, also meet our distribution requirement, as outlined here.

Courses for the social science elective may be selected from Computer Science, Psychology, Sociology-Anthropology, Political Science, Economics.

Literature courses may be selected from English Literature or Literature in Translation.

Foreign language courses reflect the foreign language requirement for the bachelor of arts degree at the university. The requirements listed for the Bachelor of Arts degree in the College of Arts and Sciences also apply to Art History majors. See the front section of the college of Arts and Sciences chapter of this catalogue for an exact listing of those requirements.

Art History Courses

ARH 125 three credits **C, G**
Studies in Visual Culture: Renaissance to Modern Art
3 lecture hours

Surveys painting, sculpture, and architecture from the Renaissance to Impressionism. FOU 125 and 150 need not be taken in sequence. (Formerly ARH 102)

ARH 150 three credits **C, G**
Studies in Visual Culture: Modern to Contemporary Art
3 lecture hours

Surveys developments in painting and sculpture from the late 19th century to World War II. The historical context of major artists and the theoretical, critical and aesthetic issues surrounding their works will be discussed. (Formerly ARH 103)

ARH 200 three credits **C, G, W**
Studies in Visual Culture: Ancient, Medieval, and World Art
3 lecture hours
Prerequisites: ARH 125, 150; or permission of instructor

Exploration of the critical relationships between art/architecture and its social, political, and economic contexts. Students will attain an intellectual and visual understanding of significant themes and issues of Ancient, Medieval, and World Art; will think and write critically about social, economic, political, and/or religious structures that influence and formulate visual art traditions; and will gain in-depth knowledge on a specific artist, art period, or theoretical problem through an extended research project. (Formerly ARH 101)

Gen Ed Note

All Art History courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.
G Global Awareness
W Writing-Intensive Course

ARH 298 one to six credits
Experiential Learning
Prerequisites: At least soph. standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

ARH 306 three credits
Roman Art

Defines the Roman qualities of Roman Art, in contrast to its Etruscan, Greek and Hellenistic forebearers. The development of painting, sculpture and architecture is traced to the time of Emperor Constantine, ca. 325 A.D.

ARH 313
The Art of Portugal

Major developments in Portuguese art from the 12th century to the present, including painting, sculpture ceramics, tiles, and architecture. Some topics to be discussed will include the Awakening of Identity; the Art of Reconquest; the Image of Empire; the Rise of the Portuguese Baroque; the Romantic Consciousness; Modernism and the Escola Portugesa; Cafes, Art and Artists of the time of Fernand Pessoa; and recent Portuguese Art: Internationalism, Absorption and Resistances. The study of contemporary art will extend to an examination of film and photography. Also offered as POR 313.

ARH 315 three credits
Romanesque Art

Architecture, painting, and sculpture in western Europe from about the year 1000 through the 12th century.

ARH 316 three credits
Gothic Art

Architecture, sculpture, manuscript painting, and stained glass from the beginnings of the Gothic in England, Normandy, and the Isle de France to the internationalization of the style in the 13th and 14th centuries.

ARH 321 three credits
Early Northern Painting

The development of panel painting in France and Flanders from 1400 to the early years of the 16th century. Close attention also is paid to miniature painting, engraving, and the beginnings of printing in this period.

ARH 325 three credits
Italian Renaissance Art

A study of the painting, sculpture, and architecture in Italy during the 15th and 16th centuries.

ARH 328 three credits
Venetian Painting

A survey of painting in Venice from the 15th through the 18th centuries. Emphasis is placed on the 16th century.

ARH 329 three credits
Portraiture

Issues and problems in portraiture, of all media, from the Renaissance through the 20th century.

ARH 336 three credits
Baroque Art in Italy and France

A study of painting, sculpture, and architecture in Italy and France during the 17th century.

ARH 337 three credits
Baroque Art in Flanders, Holland, and Spain

A study of 17th-century painting and graphics in these countries, with in-depth studies of Rubens, Rembrandt, and Velázquez.

ARH 338 three credits
British Art

A survey of British art, with emphasis on painting and graphics, from the 16th through the 19th centuries.

ARH 339 three credits
18th-Century European Painting

A study of the 18th-century European painting, in France, Britain, Italy, and Spain.

ARH 340 three credits
Late 18th-Century Art in Britain and France

An investigation of themes and issues, including the Academy, Neoclassicism, and Historicism.

ARH 342 three credits **G, W**
Impressionism to Symbolism
Prerequisite: ARH 102 or permission of instructor

An in-depth study of art from the 1860s to the early years of the 20th century.

ARH 343 three credits
Cubism
Prerequisite: ARH 102 or perm. of instructor

This course explores the origin and development of Cubism in France and its impact on artistic developments throughout Europe and the Americas. The major emphasis of this course is on painting and sculpture.

ARH 344 three credits
Expressionism
Prerequisite: ARH 102 or permission of instructor

A cultural and historical study of Expressionism from its late 19th-century forerunners through contemporary Neo-Expressionism.

ARH 347 three credits
Dada and Surrealism
Prerequisite: ARH 102 or permission of instructor

A detailed investigation of these avant-garde movements in Switzerland, Germany, France, Italy, and the U.S.A. The influence of both Dada and Surrealism on contemporary art will be examined.

ARH 349 three credits
Development of Modern Architecture

A study of world architecture from the mid-nineteenth century to 1950.

ARH 350 three credits
Picasso
Prerequisite: ARH 102 or permission of instructor

An in-depth study of Picasso's art, beginning with the youthful and academic work of the 1890s and concluding with the expressionistic and erotic work of the 1960s and 70s.

ARH 352 three credits
American Architecture to 1900

A study of architecture in North America from the first settlers to the early work of Frank Lloyd Wright.

ARH 353 three credits
Bauhaus
Prerequisite: ARH 102 or permission of instructor

Emphasizes the major innovations of the artists, architects, designers, and craftspeople at the Bauhaus in the context of their times. The range of works discussed will emphasize specific media concerns and multimedia experiments.

ARH 354 three credits
Russian and Soviet Art: From the 1860s to the Present
Prerequisite: ARH 102 or permission of instructor

An in-depth study of themes and issues in 19th and 20th century Russian and Soviet art, with special focus on Malevich and Suprematism; Kandinsky and the "Blue Rider"; Tatlin, Lissitzsky, Rodchenko and Constructivism; and the Post-Modern period.

ARH 355 three credits
American Painting
Prerequisite: ARH 102 or permission of instructor

A survey of major artists and tendencies from the earliest colonial limners to the triumph of Abstract Expressionism in the mid-20th century.

ARH 356 three credits
Art Since 1945
Prerequisite: ARH 102 or permission of instructor

A study of contemporary art, beginning with Abstract Expressionism.

ARH 360 three credits **G, W**
Survey of Primitive Art

An introduction to the arts of Africa, Oceania, and the Americas. The course will emphasize method, theory, and cross-cultural analysis.

ARH 361 three credits **G**
Art and Culture of Africa

A survey of the arts, crafts, and architecture of Africa. Historical developments, stylistics, and aesthetics will be investigated within a socio-cultural framework.

ARH 363 three credits **G**
Art and Culture of Ancient Mexico

An examination of the arts and architecture of Mexico and Central America before the arrival of the Spanish.

ARH 364 three credits **G**
Art and Culture of Ancient Peru

A survey of art and architecture of the high cultures of Peru from 5000 B.C. to 1500 A.D.

ARH 365 three credits
North American Indian Art I

Survey of the arts, crafts and architecture of the Native American populations in the Southwest, California and the Plains.

ARH 366 three credits
North American Indian Art II

This course will investigate the arts and crafts of the Northwest Coast, The Arctic area, the Eastern woodlands, and the Southeast.

ARH 367 three credits
Oceanic Art

A detailed survey of the arts and crafts of Melanesia, the Pacific Islands, and Australia. Historical and cultural determinants will be examined.

ARH 368 three credits **G, W**
Critical Perspectives of the History of Art

The history of art from the critical perspectives of post-colonial and visual culture theory. Students will review examples of post-colonial literature and the major themes of post-colonial and visual culture theory. These theories will be used to conceptualize and critique the function of race and colonialism in formulation of the history of western art.

ARH 370 three credits
Readings in Visual Culture
Prerequisite: ARH 103

Investigates important issues in the fields of design and artisanry through study of visual objects and readings, and to show how these fields are linked stylistically and conceptually.

ARH 380 three credits
Feminist Perspectives on Art History
Prerequisites: ARH 101, 102, WMS 101; or permission of instructor

Analyzes the feminist critique of the history of art. This course will review recent critiques of both art and culture through an investigation of the production and evaluation of art and the role of the artist in Western and non-Western cultures. Also offered as WMS 380.

ARH 385 three credits
Women Artists and the Histories of Art

Provides knowledge and understanding of the art made by women from the Late Medieval period through Contemporary periods of art. This study will be set in the context of specific social, familial, economic, and psychological conditions of the period in which the art was made. The course will familiarize students with recent feminist critiques of visual culture.

Graduate Courses in Art History

ARH 442 to **490**
Seminars
Prerequisite: Permission of instructor

Students will examine the bibliography and research methods of the discipline of Art History. They will pursue extensive research which will be presented in written and oral formats.

ARH 445 three credits
Issues in 20th-Century Art

ARH 450 three credits
Problems in American Art: New England Architecture

ARH 460 three credits
Problems in Primitive Art

ARH 461 three credits
Problems in Pre-Columbian Art

ARH 481 three credits
Literature of Art: Iconography

ARH 482 three credits
Literature of Art: Artists' Biographies

ARH 483 three credits
Literature of Art: Grand Tour in Art and Literature

ARH 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

ARH 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

ARH 500 three credits
Method and Theory in Art History

An introduction to art historical methodology with application to studio problems. Oral reports and research papers are required.

ARH 525 three credits
Seminar: Issues and Problems in Art History
Prerequisite: ARH 200 or comparable course, or permission of instructor

An in-depth study of major artists and movements since World War II, with a focus on current issues, exhibitions, and events within national and international art. The course will question the relationship between form and subject matter, and focus on the role of art in contemporary life. Elective course for MFA students; may be used toward MAE degree.

ARH 595 variable credit
Independent Study
Prerequisites: Permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

ARH 596 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Note: Graduate ARH courses are not open to undergraduate students.

The department offers two undergraduate degrees, a BFA in Visual Design and a BFA in Textile Design/Fiber Arts.

Under those two headings students pursue work in a wide variety of options. These options are grouped into two general categories, visual arts related to visual design professions (Visual Design) and visual arts related to the crafts professions (Artisanry).

Visual design options include Graphic Design/Letterform, Illustration, and Photographic/Electronic Imaging. Artisanry options include Ceramics, Jewelry/Metals, and Textile Design/Fiber Arts.

The Design Department takes advantage of being in a university structure—providing a challenging stimulus within the whole, interrelating the verbal with the visual and the conceptual with the perceptual. Because the function of Design is to communicate, it has a built-in relationship with all disciplines, and involves cultural, behavioral, social and technological factors.

Admission to specific options requires submission of portfolio.

All transfer students who wish to be admitted to courses marked with a "*" above the sophomore level must bring a portfolio to transfer orientation. Acceptance into advanced courses is rare, not automatic.

Faculty and Fields of Interest

Scott Ahrens electronic imaging

Alma de la Ronde photographic imaging, history of photography, alternative photographic processes

Robert Selby illustration

Elaine Fisher photographic imaging, electronic imaging

Laura Franz graphic design, electronic imaging

Howard T. Glasser calligraphy, graphic design/letterform

Barbara Goldberg (director: MFA programs) textile design/fiber arts

Harvey Goldman electronic imaging

Susan Hamlet (spokesperson: artisanry) jewelry/metals

Karen Klingon illustration

Spencer Ladd graphic design, electronic imaging

Lenny Long illustration

Ziddi Msangi design, digital media, web design

Carolyn A. J. Mills textile design/fiber arts

Mark Millstein electronic imaging

Marjorie Durko Puryear textile design/fiber arts

Alan Burton Thompson jewelry/metals

Stephen Whittlesey wood/furniture design

Howard Windham (chairperson) graphic design/letterform, history of design

Janine Wong graphic design/letterform

Visual Design Major
BFA degree

Visual Design Options

The Visual Design area is a cluster of professionally-oriented options: Graphic Design/Letterform, Illustration, and Photographic/Electronic Imaging. The emphasis throughout these programs is communication. Students explore visual communication in the widest sense, employing contemporary electronic and computer technology.

Faculty representing a variety of philosophies and viewpoints teach visual design as an art form, a craft, or as information dissemination for education, business and commerce, or the entertainment industries. The modern visual artist/designer must be broadly educated, articulate, and literate, an active participant in all levels of a project, not merely someone who dutifully packages the finished product.

Student Reviews

Each Visual Design Option has a list of designated courses, each of which requires a grade of C or better. A student who receives a C- or below in a designated course shall be subject to dismissal from the major option. The student shall be reviewed by the department chairperson (or designee) and a minimum of one faculty member from the student's Option. A review will determine whether the student may continue in the Option. If continuance is denied, the student will be offered academic advising. If continuance is approved, conditions will be stipulated in writing. If the course must be repeated, it will be under university regulations—that a student may repeat, but only if space is available and with consent of the chairperson and advisor. If the course to be repeated is a pre-requisite for the next required level, the student's advancement may be delayed by a full year. A student who receives a second grade of C- in a designated course during a subsequent semester shall be subject to dismissal from all Visual Design options.

Graphic Design/Letterform Option

The Graphic Design/Letterform option is directed toward professional competence. It refuses to fetter the designer with a rigid set of principles or practices. The assigned projects deal with communications in the widest sense, and the student is expected to solve these projects through a creative process that combines conceptual and technical skills.

Studio Electives

DES 211	Color Studio
DES 213, 214	Calligraphy I-IV
DES 216	Dimensional Design
DES 221 to 422	Illustration I-VI
DES 281 to 482	Photographic Imaging I-VI
DES 317	Art of the Book
DES 351 to 452	Graphic Design III-VI
DES 353 to 454	Letterform III-VI
DES 383 to 484	Electronic Imaging III-VI
DES 385	Studio Photography
FIA 321 to 422	Drawing III-VI

Order of courses
Letterform II may be taken before Letterform I and is prerequisite for Electronic Imaging III-VI. Photographic Imaging I-II are prerequisites for Electronic Imaging III.

Free Electives
All university courses (including Studios and Studio Electives) may be used as Free Electives.

***Designated Course**
Students in this program must complete the course(s) indicated with a grade of C or better; if a C- or lower is received, the course must be retaken.

Requirements

		Semester Credits First	Second
First Year			
FOU 101, 102	Visual Arts Colloquium	1	1
FOU 110, 112	Foundation: Structural/Life Drawing	3	3
FOU 114, 115	*2D Workshop/Visual Language	2	2
FOU 124, 125	3D Concepts/3D Workshops	2	2
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 150	Visual Culture: Modern to Contemp. Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Gen Ed E, D, or G/Social Science electives	3	3
		17	**17**
Second Year			
DES 251, 252	*Graphic Design I, II	3	3
DES 253, 254	*Letterform I, II	3	3
DES 281	Photo Imaging I	3	
DES 283	Electronic Imaging I		3
FIA	200/300-Level Drawing	3	3
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
	Gen Ed D, G, W/Literature electives	3	3
	Mathematics		3
		18	**18**
Third Year			
DES 351	*Graphic Design III	3	
DES 353	*Letterform III	3	
DES 352 or 354	*Graphic Design IV **OR** Letterform IV		3
	Studio elective		
DES 331	History of Design	3	
DES 384 or DES or FIA	Electronic Imaging IV **OR** Studio elective		3
	Gen Ed/Natural Science electives	3	3
ARH	Art History elective	3	
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
	Free elective		3
		15	**15**
Fourth Year			
DES 451 or 453	*Graphic Design V **OR** Letterform V	6	
DES 452 or 454	*Graphic Design VI **OR** Letterform VI		6
DES or FIA	Studio elective	3	3
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
300/400 Level	Gen Ed E, D, or G/Hum or Soc Sci elective	3	
	Free electives	3	3
		15	**15**
		Total credits:	**130**

Illustration Option

The Illustration option introduces students to a wide range of specialized areas within the field. Editorial, book, and documentary approaches in illustration may be pursued depending on the students' various interests and talents. High level drawing and color skills are developed and emphasized in this area of study.

Recommended Studio Electives

DES 211	Color Studio
DES 213, 214	Calligraphy I-II
DES 215	Structural Representation
*DES 254	Letterform II
DES 281, 282	Photo. Imaging I, II
DES 317	Art of the Book
*DES 383 to 484	Electronic Imaging III-VI
FIA 223, 224	Nature Drawing I, II
FIA 225	Object Drawing
FIA 285 to 482	Printmaking (ALL)
FIA 311	Composition & Design
*FIA 321, 422	Drawing VI, V

Order of courses
Letterform II may be taken before Letterform I and is prerequisite for Electronic Imaging III-VI. Photographic Imaging I-II are prerequisites for Electronic Imaging III.

Free Electives
All university courses (including Studios and Studio Electives) may be used as Free Electives.

***Designated Course**
Students in this program must complete the course(s) indicated with a grade of C or better; if a C- or lower is received, the course must be retaken.

Requirements

		Semester Credits First	Second
First Year			
FOU 101, 102	Visual Arts Colloquium	1	1
FOU 110, 112	Foundation: Structural/Life Drawing	3	3
FOU 114, 115	*2D Workshop/Visual Language	2	2
FOU 124, 125	3D Concepts/3D Workshops	2	2
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 150	Visual Culture: Modern to Contemp. Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Gen Ed E, D, or G/Social Science electives	3	3
		17	**17**
Second Year			
DES 221, 222	*Illustration I, II	3	3
FIA 221, 222	Figure Drawing I, II	3	3
FIA 241, 242	Painting I, II	3	3
DES 282	Electronic Imaging I	3	
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
	Gen Ed G, D, W/Literature electives	3	3
	Mathematics elective		3
	Studio elective		3
		18	**18**
Third Year			
DES 321, 322	*Illustration III, IV	3	3
ARH	Art History elective	3	
	Gen Ed/Natural Science electives	3	3
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
FIA 321	Firgure Drawing III	3	
FIA 341	Painting III	3	
FIA 342 or 322	Painting IV **OR** Figure Drawing IV		3
	Free elective		3
		15	**15**
Fourth Year			
DES 421, 422	*Illustration V, VI	6	6
FIA 441 or 421	Painting V **OR** Drawing V	3	
FIA 442 or 422	Painting VI **OR** Drawing VI		3
300/400-Level	Gen Ed E, D, or G/Hum or Soc Sci elective	3	
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
	Free electives	3	3
		15	**15**
	Total credits:		**130**

Photographic/Electronic Imaging Option

Students are introduced to traditional photographic and contemporary electronic media. Vigorous historical and conceptual components and hands-on skills and methodologies complete the course of study, allowing a student to solve a wide range of visual and aesthetic challenges. The communications industry, most corporations and businesses, the entire field of education, the health field, and other entities in the media are in need of people educated in these areas.

Photography courses cover basic to advanced equipment and processing information, historical to contemporary alternative processes, and an understanding of image content as it relates to communication. Course work in color perception and processing, the history of photographic/electronic media, commercial studio lighting, and photographic processes in printmaking complete this course of study.

Students in Electronic Imaging courses are introduced to digital and electronic design technology. The manipulation and integration of images, video, graphics, text, and sound are combined in the creation of a common language. Students in this course of study will become knowledgeable in computer image capturing and processing technology, computer animation, multimedia production, and design for the World Wide Web.

Requirements: Electronic Imaging emphasis

		Semester Credits	
		First	**Second**
First Year			
FOU 101, 102	Visual Arts Colloquium	1	1
FOU 110, 112	Foundation: Structural/Life Drawing	3	3
FOU 114, 115	*2D Workshop/Visual Language	2	2
FOU 124, 125	3D Concepts/3D Workshops	2	2
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 150	Visual Culture: Modern to Contemp. Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Gen Ed E, D, or G/Social Science electives	3	3
		17	**17**
Second Year			
DES 283	*Electronic Imaging I		3
DES 281	*Photographic Imaging I	3	
DES 254	*Letterform II	3	
DES 251, 252	*Graphic Design I, II	3	3
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
DES 332 or	History of Photography **OR**		
	Free elective		3
FIA	200-level Drawing I, II	3	3
	Gen Ed G, D, W/Literature electives	3	3
	Mathematics elective		3
		18	**18**
Third Year			
DES 383, 384	*Electronic Imaging III, IV	3	3
DES 385	Studio Photography **OR**		
DES or FIA	Studio elective		3
FIA 311	Composition & Design **OR**		
DES or FIA	Studio elective	3	
DES or FIA	Studio elective	3	
ARH	Art History elective	3	
	Gen Ed/Natural Science electives	3	3
	Free elective		3
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
		15	**15**
Fourth Year			
DES 483, 484	*Electronic Imaging V, VI	6	6
DES 211	Color Studio **OR**		
DES or FIA	Studio elective	3	
DES or FIA	Studio elective		3
300/400-Level	Gen Ed E, D, or G/Hum or Soc Sci elective	3	
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
	Free electives	3	3
		15	**15**
	Total credits:		**130**

Recommended Studio Electives
Courses below may be used as Studio electives or as Free electives.

DES 211 Color Studio
DES 221 to 422 Illustration I-VI
DES 253 to 353 Letterform I-VI
DES 351 to 452 Graphic Design III-VI
DES 282 to 482 Photographic Imaging III-VI
DES 284 to 484 Electronic Imaging III to VI
DES 385 Studio Photography
FIA 288 Photo Processes/Printmaking
FIA 311 Composition and Design
FIA 381 Advanced Printmaking: Screen Printing

Order of courses
DES 252 is a prerequisite for Electronic Imaging III-VI. Letterform II may be taken before Letterform I and is required for Electronic Imaging III, VI.

Free Electives
All university courses (including Studios and Studio Electives) may be used as Free Electives.

***Designated Course**
Students in this program must complete the course(s) indicated with a grade of C or better; if a C- or lower is received, the course must be retaken.

Requirements:
Photographic Imaging emphasis

		Semester Credits	
		First	**Second**
First Year			
FOU 101, 102	Visual Arts Colloquium	1	1
FOU 110, 112	Foundation: Structural/Life Drawing	3	3
FOU 114, 115	*2D Workshop/Visual Language	2	2
FOU 124, 125	3D Concepts/3D Workshops	2	2
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 150	Visual Culture: Modern to Contemp. Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Gen Ed E, D, or G/Social Science electives	3	3
		17	**17**
Second Year			
DES 281	*Photographic Imaging I	3	
DES 283	Electronic Imaging I		3
DES 251, 252	Graphic Design I, II	3	3
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
DES 332	History of Photography		3
DES 254	Letterform II **OR**		
DES or FIA	Studio elective	3	
FIA	200-level Drawing I, II	3	3
	Gen Ed G, D, W/Literature electives	3	3
	mathematics elective		3
		18	**18**
Third Year			
DES 381, 382	*Photographic Imaging III, IV	3	3
DES 385	Studio Photography		3
FIA 311	Composition & Design **OR**		
DES or FIA	Studio elective	3	
DES or FIA	Studio elective	3	
ARH	Art History elective	3	
	Gen Ed/Natural Science electives	3	3
	Free elective		3
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
		15	**15**
Fourth Year			
DES 481, 482	*Photographic Imaging V, VI	6	6
	Studio electives	3	3
300/400-Level	Gen Ed E, D, or G/Hum or Soc Sci elective	3	
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
	Free electives	3	3
		15	**15**
	Total credits:		**130**

Recommended Studio Electives
Courses below may be used as Studio electives or as Free electives.

DES 211 Color Studio
DES 221 to 422 Illustration I-VI
DES 253 to 353 Letterform I-VI
DES 351 to 452 Graphic Design III-VI
DES 282 to 482 Photographic Imaging III-VI
DES 284 to 484 Electronic Imaging III to VI
DES 385 Studio Photography
FIA 288 Photo Processes/Printmaking
FIA 311 Composition and Design
FIA 381 Advanced Printmaking: Screen Printing

Order of courses
Studio Photography is prerequisite for Photographic Imaging V-VI. Letterform II may be taken before Letterform I.

Free Electives
All university courses (including Studios and Studio Electives) may be used as Free Electives.

***Designated Course**
Students in this program must complete the course(s) indicated with a grade of C or better; if a C- or lower is received, the course must be retaken.

Artisanry Areas

The Artisanry programs at UMass Dartmouth have earned a national reputation for excellence in craft education. Undergraduates in Artisanry may pursue BFA options in Ceramics and Jewelry/Metals. They may also major in Textile Design/Fiber Arts. A graduate degree, the MFA in Artisanry, offers specialization in Ceramics, Fibers, Metals, or Wood. Wood/Furniture is offered on the undergraduate level as an elective.

The educational philosophy of the Artisanry programs has evolved from the craft tradition of functional object making, emphasizing professional standards in technical skill and deign, knowledge of history of the craft, and personal aesthetic development.

Frequent presentations in each area by visiting artists, lecturers, and designers representing diverse fields supplement the artisanry student's education. Students are challenged to extend their creative involvement into the areas of object production, artistic expression, or design for industry. The goal is to instill the confidence and self-discipline necessary to sustain productive artistic careers.

The studio facilities, located at the university's New Bedford campus, contain state-of-the-art equipment and have ample work areas that encourage artistic development.

Ceramics Option

Ceramics at UMass Dartmouth balances between traditional and non-traditional work and encourages both sculptural and functional approaches. A variety of clay techniques and forming processes are taught, including hand-building, wheel-throwing, and slip-casting. Ceramics students learn how to use clay and glaze materials, to build and fire kilns, and to utilize the history of their craft. The Ceramics faculty encourages in its students individual exploration and professional goals.

Recommended Studio Electives
Courses below may be used as Studio Electives or as Free Electives.

DES 305 Issues & Criticism in Ceramic Arts
DES 306 Moldmaking

Free Electives
All university courses (including Studios and Studio Electives) may be used as Free Electives.

*** Designated Courses**
Students in this program must complete the course(s) indicated with a grade of C or better; if a C- or lower is received, the course must be retaken.

Requirements

		Semester Credits	
		First	**Second**
First Year			
FOU 101, 102	Visual Arts Colloquium	1	1
FOU 110, 112	Foundation: Structural/Life Drawing	3	3
FOU 114, 115	*2D Workshop/Visual Language	2	2
FOU 124, 125	3D Concepts/3D Workshops	2	2
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 150	Visual Culture: Modern to Contemp. Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Gen Ed E, D, or G/Social Science electives	3	3
		17	**17**
Second Year			
DES 291, 292	*Ceramics I, II	3	3
FIA 221, 222	Figure Drawing I, II	3	3
DES or FIA	Studio electives	6	6
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
	Gen Ed D, G, W/Literature electives	3	3
	Mathematics elective		3
		18	**18**
Third Year			
DES 391, 392	*Ceramics III, IV	3	3
DES 303	Ceramic traditions	3	
DES 304, 307	Clay & Glazes I, II	3	3
ARH	Art History elective	3	
	Gen Ed/Natural Science electives	3	3
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
	Free elective		3
		15	**15**
Fourth Year			
DES 491, 492	*Ceramics V, VI	6	6
DES 308	Kiln-Building	3	
DES or FIA	Studio elective		3
	Free electives	3	3
300/400-Level	Gen Ed E, D, or G/Hum or Soc Sci elective	3	
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
		15	**15**
	Total credits:		**130**

Jewelry/Metals Option

At UMass Dartmouth, Jewelry/Metals offers a comprehensive and diverse understanding of the technical and aesthetic potential of metal. Earlier studies feature skills for metal fabrication, construction, forming, and surface treatment, while later, more advanced studies explore such techniques as forging, casting, stone-setting, chasing/repousée, holloware, enameling, and die-forming. As students gain technical skills, they are encouraged to grow in expressive ability and to strive toward professionalism.

Free Electives
All university courses (including Studios and Studio Electives) may be used as Free Electives.

***Designated Courses**
Students in this program must complete the course(s) indicated with a grade of C or better; if a C- or lower is received, the course must be retaken.

Requirements

		Semester Credits	
		First	**Second**
First Year			
FOU 101, 102	Visual Arts Colloquium	1	1
FOU 110, 112	Foundation: Structural/Life Drawing	3	3
FOU 114, 115	*2D Workshop/Visual Language	2	2
FOU 124, 125	3D Concepts/3D Workshops	2	2
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 150	Visual Culture: Modern to Contemp. Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Gen Ed E, D, or G/Social Science electives	3	3
		17	**17**
Second Year			
DES 293, 294	*Jewelry/Metals I, II	3	3
FIA 221, 222	Figure Drawing I, II	3	3
DES or FIA	Studio electives	6	6
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
	Gen Ed D, G, W/Literature electives	3	3
	Mathematics elective		3
		18	**18**
Third Year			
DES 393, 394	*Jewelry/Metals III, IV	3	3
DES 395	Enameling		3
DES or FIA	Studio electives	6	
ARH	Art History elective	3	
	Gen Ed/Natural Science electives	3	3
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
	Free elective		3
		15	**15**
Fourth Year			
DES 493, 494	*Jewelry/Metals V, VI	6	6
DES or FIA	Studio electives	3	3
	Free electives	3	3
300/400-Level	Gen Ed E, D, or G/Hum or Soc Sci elective	3	
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
		15	**15**
		Total credits:	**130**

Textile Design/Fiber Arts Major
BFA degree

The Bachelor of Fine Arts in Textile Design/ Fiber Arts balances woven and printed textile design for industry with fiber art for individual aesthetic expression. Courses in weaving introduce students to four-harness and multi-harness structures, multiple layered weaves, open weaves, dyed and painted warps, tapestry, and other techniques which allow the properties of color, fiber, texture and imagery to interact. Course in textile design introduce students to croquis pattern design and repeat formats in a wide range of rendering techniques, and surface design on fabric including processes such as photo-silkscreen printing, immersion and resist dyeing, and block printing. All Textile Design/ Fiber Arts courses encourage exploration of design ideas in combination with complex weaving and dyeing systems unique to textiles.

In each course, projects may be garments, rugs, upholstery, site-specific installations, yardage pieces, or designs to be included in a portfolio for industry. The InfoVision CAD system is being introduced to the curriculum, facilitating and extending the design process.

All textile design students also enroll in a basic sequence of textile technology courses which provide an additional introduction to industry production of woven fabrics and jacquard design. Summer or senior year internships with regional industry are encouraged.

Those interested in the Textile Design/Fiber Arts major may also be interested in the textile science majors offered through the College of Engineering.

Requirements

		Semester Credits	
		First	**Second**
First Year			
FOU 101, 102	Visual Arts Colloquium	1	1
FOU 110, 112	Foundation: Structural/Life Drawing	3	3
FOU 114, 115	*2D Workshop/Visual Language	2	2
FOU 124, 125	3D Concepts/3D Workshops	2	2
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 150	Visual Culture: Modern to Contemp. Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Gen Ed E, D, or G/Social Science electives	3	3
		17	**17**
Second Year			
DES 277, 278	*Textile Design I, II	3	3
DES 273, 274	Weaving I, II	3	3
FIA 223, 224	Nature Drawing I, II	3	3
DES or FIA	Studio electives[1]	3	3
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
	Gen Ed D, G, W/Literature electives	3	3
	Mathematics elective		3
		18	**18**
Third Year			
DES 377, 378	*Textile Design III, IV **OR**	3	3
DES 373, 374	*Weaving III, IV		
TES 300, 312	Fabric Design and Structure I, II	3	3
DES 372	Textile Design/Computer Design	3	
ARH	Art History elective	3	
	Gen Ed/Natural Science electives	3	3
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
	Free elective		3
		15	**15**
Fourth Year			
DES 477, 478	*Textile Design/Weaving V, VI	3	3
DES 476, 479	*Senior Fibers I, II	3	3
DES or FIA	Studio electives[1, 2]	3	3
	Free electives	3	3
300/400-Level	Gen Ed E, D, or G/Hum or Soc Sci elective	3	
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
		15	**15**
		Total credits:	**130**

*** Designated Courses**
Students in this program must complete the course(s) indicated with a grade of C or better; if a C- or lower is received, the course must be retaken.

[1]**Studio Elective Pool** (select six courses from the following, which might be offered at either the main campus or the New Bedford campus):
Any studios in the Artisanry area
Any studios in the Design area
Any studios in Fine Arts area

[2]Students may seek from their advisors approval to substitute an appropriate course or courses in Textile Science.

Free Electives
All university courses (including Studios /Studio Electives) may be Free Electives.

Visual Design Courses

Visual Design—Courses in Common

Gen Ed Note

All Design courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.

DES 126 three credits **C**
Art, Craft, and Popular Objects

Survey of the visual arts and consumer products from the 40s to the 80s. The objects we live with, use and wear reflect the beliefs, attitudes and tastes of the time. This course offers a survey of the development of the pop object, product design and craft media from World War II to the present. An overview of world events, art and architecture, political and social change will be included to provide context and chronology.

DES 211 three credits **C**
Color Studio
Prerequsite: FOU 114, 115

A second-year course for students within the design department. Emphasis is on an exploration of major concepts of color use and theory for artists. Color pigments are used to achieve expressive variations in palettes.

DES 215 three credits **C**
Structural Representation

Provides the student with experience in handling volume and spatial arrangements.

DES 216 three credits **C**
Dimensional Design
Prerequisite: DES 215 or permission of instructor

For Art, Engineering and other students wishing to pursue projects in Public Art Proposals or in architectural, sculptural, or environmental settings. Multidisciplinary concept of design, technical drawing, site study, perspective renderings, structural and fabrication techniques are explored.

DES 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

DES 300 three credits
Concepts in Design

Offered as needed to present material in he design field. The specific topic is stated when the course is scheduled. May be repeated with change of content

DES 333/533 three credits
On Creativity
Prerequisites: ENL 101, 102

Basic patterns of conscious and unconscious information processing underlying artistic, humanistic, and scientific inspiration, discovery, and invention.

DES 317 three credits
Art of the Book
Prerequisites: Junior standing, any art major

Experimental approaches to bookmaking. Exploring conceptual attitudes will be combined with developing skills in bookbinding, papermaking, assorted printed processes and other related techniques.

DES 331 three credits
History of Design
3 lecture hours

A slide/lecture course covering the history of modern graphic design from the mid-1800s to the present. Aside from viewing the work, attention is given to the artists, their technical and esthetic contributions, and to the larger social, political and philosophical developments that are the content of this field.

DES 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

DES 196, 296, 396, 496 variable credit
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

All studios meet two hours weekly for each credit offered.

Calligraphy

DES 213 three credits C
Calligraphy I

The fundamentals of letterform as a language system and its graphic implications. Projects emphasize the visual relationships of formal and informal letterforms as affected by natural rhythms, line shape, texture and the integration of images and decoration. This course is open to any student of the university.

DES 214 three credits **C**
Calligraphy II
Prerequisite: DES 213

Continuation of DES 213, an in-depth study of the five basic alphabet styles through design problems. This course is open to any student of the university.

DES 313 three credits
Calligraphy III
Prerequisite: DES 214

Continuation of DES 214, a study of lettering, type design, and calligraphy. This course is open to any student of the university.

DES 314 three credits
Calligraphy IV
Prerequisite: DES 313

Continuation of DES 313. This course is open to any student of the university.

Graphic Design

DES 251 three credits **C**
Graphic Design I
Prerequisites: FOU 114, 115

Translation of fundamental visual design concepts into the more specific concepts of communications design. The varied projects are intended to introduce both contemporary and traditional skills and methods. Graphic design is approached as a *process* that combines aesthetic, intellectual, and technical components.

DES 252 three credits **C**
Graphic Design II
Prerequisite: DES 251

Continuation of DES 251.

DES 351 three credits
Graphic Design III
Prerequisite: DES 252

An intermediate-level course for the professionally oriented student. The design process is further emphasized through projects that explore graphic imagery and the interrelationship between word and image. The importance of language to the designer is also stressed; development of the student's writing skills are encouraged hand-in-hand with the development of design skills.

DES 352 three credits
Graphic Design IV
Prerequisites: DES 351, 254

Continuation of DES 351.

DES 451 six credits **W**
Graphic Design V
Prerequisite: DES 352

Preparation for professional work in the field of graphic design. Assignments continue to introduce a variety of directions such as: publications design, packaging, public relations, environmental elements, communications problems, and systems design. At the same time the student's conceptual and perceptual skills are sharpened and channelled toward portfolio quality work.

DES 452 six credits **W**
Graphic Design VI
Prerequisite: DES 451

Continuation of DES 451.

Photographic/Electronic Imaging

DES 281 three credits **C**
Photographic Imaging I

A survey of the theory of black and white photography. Emphasis will be on darkroom experience, including the development of film, contact and enlargement printing. This course is open to any student of the university. It is a prerequisite for Electronic Imaging III.

DES 282 three credits **C**
Photographic Imaging II
Prerequisite: DES 281

Continuation of DES 281 with emphasis on development of photographic printing skills, professional presentation, and exploration of contemporary means of photographic expression. This course is open to any student of the university. It is a prerequisite for Electronic Imaging III.

DES 283 three credits **C**
Electronic Imaging I
Prerequsite: FOU 114, 115

Presents the skills necessary to construct complex and detailed drawings, illustrations, montages, and collages using the digital medium. Students will experiment with color correcting and retouching of digitized images and will be introduced to the vast range of effects associated with electronic imaging.

DES 284 three credits **C**
Electronic Imaging II
Prerequisite: DES 283

Continuation of DES 283.

DES 332 three credits
History of Photography
3 lecture hours

Survey, through lecture and audio-visual presentation of the development of technical and aesthetic concerns in photography from its origins to the present. Special attention will be paid to the impact of historic events on the aesthetic considerations of the day. This course is open to any student of the university.

DES 381 three credits
Photographic Imaging III
1 1/2 hour lecture, 3 hours laboratory
Prerequisite: DES 281, 283

The development of a personal approach to photography as well as application of techniques used in applied photography, integrated in a series of projects involving multiple image printing, use of high contrast film, and large format camera work. This course is open to any student of the university.

DES 382 three credits
Photographic Imaging IV
1 1/2 hour lecture, 3 hours laboratory
Prerequisite: DES 381

Continuation of DES 381 with further exploration of experimental techniques and their application to applied and personal photographic statements. A brief survey is made of the history of photography.

DES 383 three credits
Electronic Imaging III
Prerequisites: DES 281, 283, 251, 254

Exploration in depth of the concepts of change, transformation, and visual rhythm. The student will be introduced to two dimensional computer paint and animation programs, image-processing technology as well as basic story-boarding. The history of animation and its relationship to other media will be explored through required readings and seminar style discussion. Students will produce a number of still and animated pieces.

DES 384 three credits
Electronic Imaging IV
Prerequisite: DES 383

Three-dimensional computer animation skills are the focus of this class. In-depth studies of natural forms and their associated motions will be emphasized along with discussions of time, space, color, and light. Storyboarding, lighting, and editing techniques will be introduced along with a variety of readings on the political and social role electronic media have played in contemporary society. Students will produce a number of short animations related to these technical areas as well as an in-depth final production.

DES 385 three credits
Studio Photography
Prerequisite: DES 281
3 hours laboratory; studio demonstrations, print and slide presentation three hours

Professional methods of photographing two and three dimensional objects in black and white, and color. Lighting techniques utilizing daylight, quartz lights and

Gen Ed Note

All Design courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.
W Writing Intensive Course

All studios meet two hours weekly for each credit offered.

Illustration

electronic flash are studied. Film formats from 35 mm to 4x5 are used to produce prints and transparencies. Effective use of simple studio props is studied.

DES 481 six credits
Photographic Imaging V
3 hours lecture/6 hours laboratory
Prerequisite: DES 382

An intensive study of advanced techniques used in contemporary photography. Emphasis is placed on the development of a personal fine-arts photographic approach coupled with professional esthetic standards. This course is open to any student of the university.

DES 482 six credits
Photographic Imaging VI
3 hours lecture/6 hours laboratory
Prerequisite: DES 481

Continuation of DES 481 with an emphasis placed on the preparation of a professional photographic portfolio. This course is open to any student of the university.

DES 483 six credits
Electronic Imaging V
Prerequisite: DES 384

Professional skills for the construction of interactive multimedia presentations for CD-ROM and the Internet. research, navigation, and interface design are emphasized. Central to the course is the development of technical proficiencies to author with image, text, animation, audio, and video. This course emphasizes the solving of a wide range of communication and technical problems as well as the development of each student's individual vision.

DES 484 six credits
Electronic Imaging VI
Prerequisite: DES 483

Production by students of high-quality senior level projects and portfolios. Students may work in the areas of still imaging, animation, or interactive multimedia, or design for the Internet. The class includes exploration and presentations of professional opportunities in electronic imaging. The course also includes readings and discussion of politics and ethics of electronic media in contemporary society.

DES 221 three credits **C**
Illustration I
Prerequisites: DES 110, 112

An introduction to illustration focusing on drawing and composition as they relate to the special needs of the illustrator; an exploration of the tools, techniques, and surfaces commonly used in illustration, with emphasis on black and white media.

DES 222 three credits **C**
Illustration II
Prerequisite: DES 221

Continuation of DES 221 focusing on color media, with an introduction to concepts for illustrators. The course also includes a review of procedures used in gathering reference material for illustration, and a slide survey of the history of illustration.

DES 321 three credits
Illustration III
Prerequisite: DES 222

Through specific projects, students are introduced to a wide range of specialized areas within the illustration field. This course also includes indepth exploration of concepts for illustrators and slide surveys of both contemporary illustration and the work of fine artists who have influenced illustration.

DES 322 three credits
Illustration IV
Prerequisite: DES 321

Continuation of DES 321 with increasing focus on the student's individualized area of interests and the tools and techniques most appropriate to that area. This course also includes guest lecturers by professional illustrators.

DES 323 three credits
Fashion Illustration I
Prerequisites: FOU 110, 112

Learning to draw the fashion figure. Includes intensive drawing from clothed models, fashion photos and prototypes. Rendering skills to be developed by working from a wide variety of clothing and accessories as well as through experimentation with painting and illustrational techniques. Includes female, male and children's fashion illustration. Attention will also be given to the composition of the total fashion ad, with layout assignments dealing with the relationship of figure to type.

DES 324 three credits
Fashion Illustration II
Prerequisite: DES 323 or permission of instructor.

Continuation of DES 323.

DES 421 six credits
Illustration V
Prerequisite: DES 322

Students develop their individual strengths and interests to bring technical and conceptual skills to a professional level and to define a personal style. This course also includes projects which will result in printed work, and frequent guest lectures.

DES 422 six credits
Illustration VI
Prerequisite: DES 421

Continuation of DES 421. Each student designs and executes a long-term project in his or her particular area of interest in order to build a consistent, professional-level portfolio. Self promotion and business aspects of the illustration field are explored.

Gen Ed Key

All Design courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.
G Global Awareness
W Writing Intensive Course

Letterform

DES 253 three credits **C**
Letterform I

Lectures trace the development of the alphabet, written and drawn, from primitive times, through the invention of printing from movable type, to the present. A studio component further sensitizes the student to the continuing evolution of letterforms through a series of exercises and projects. Note: Either DES 233 and 254 may be taken first. Open to any student of the university.

DES 254 three credits **C**
Letterform II

Continuation of the lecture survey while the studio brings the student fully into the modern era with an introduction to typographic systems and computer typesetting. Note: Either DES 233 and 254 may be taken first. Open to any student of the university.

DES 353 three credits
Letterform III
Prerequisites: DES 253, 254

The student engages in typographic design projects on an advanced level. Emphasis is placed on effective communication as well a aesthetic values.

DES 354 three credits
Letterform IV
Prerequisite: DES 353

Continuation of DES 353. This course solves more complex concerns of design communication, within the confines of typography. A full spectrum of problems that one may encounter in graphic communication are attempted.

DES 453 six credits **W**
Letterform V
Prerequisite: DES 354

Students work with expressive and experimental approaches to typographic design in this upper level course. Students are encouraged to aim for a sophisticated, personal portfolio which will prepare them for entry into the rapidly emerging profession of typography.

DES 454 six credits **W**
Letterform VI
Prerequisite: DES 453

Continuation of DES 354.

Ceramics

DES 291 three credits **C**
Ceramics I
Prerequisite: Foundation courses for majors; no prerequisite for non-majors.

Clay as a material for making art. A variety of handbuilding and forming techniques will be explored through the context of making objects. Clay, slip, glaze, and various firing methods will be presented.

DES 292 three credits **C**
Ceramics II
Prerequisite: Foundation courses for majors; no prerequisite for non-majors.

The potter's wheel as the primary forming tool in making pottery. Utility and function will be the primary intention, using the formed vessel as a means of expression. Clay bodies, slips, glazes, and firing methods will be presented.

DES 303 three credits
Ceramic Traditions
3 hours lecture

The individual artists and philosophies responsible for the development of 20th-century American studio ceramics. Contemporary ceramics and its relationship with technical, historical, and philosophical concerns will be presented.

DES 304 three credits
Clay and Glazes I
Prerequisites: DES 291, 292; or permission of instructor

Individual clays, clay body formulation, and engobes. Various physical properties of clay materials that determine color, firing temperature, and plasticity will be discussed, along with the formulation of specific clay bodies for a variety of forming methods and firing techniques.

DES 305 three credits
Issues and Criticism in the Ceramic Arts
Prerequisites: DES 291, 292; or permission of instructor
3 hours lecture

An exploration of the ways in which ceramic artists throughout history have used their medium to create a broad range of utilitarian and symbolic forms. The course will concentrate on the aesthetic principles inherent in the ceramic arts.

DES 306 three credits
Moldmaking
Prerequisites: DES 291, 292; or permission of instructor

The fundamentals, information, and skills necessary to make a variety of molds used in the ceramic process. The casting and forming methods available to ceramists through plaster and other materials will be explored.

DES 307 three credits
Clay and Glazes II
Prerequisites: DES 291, 292, 304; or permission of instructor

The physical properties of glaze materials used in the ceramic process. Through lectures and lab assignments, students will learn to translate technical information into visual and tactile objects while exploring glaze surface, color, and transparency.

DES 308 three credits
Kiln Building
Prerequisites: DES 291, 292; or permission of instructor

The information and skills necessary to design and build a variety of ceramic kilns. Discussion will include fuel sources, burner design, and combustion needs for these fuels, and how these factors affect kiln design.

DES 391 three credits
Ceramics III
Prerequisite: DES 292

Exploration of the many possibilities of clay. Students will develop a variety of ideas using handbuilding, wheel-thrown, and slip-cast molds as forming methods. Issues related to sculpture and their translation to the ceramics medium will be discussed.

DES 392 three credits
Ceramics IV
Prerequisite: DES 391

Using the technical knowledge acquired in previous semesters, students will develop a personal aesthetic direction. Students will be challenged to explore the large range of possibilities within the field of ceramics as it applies to their personal goals.

* Student majors are required to take the 300- and 400-level courses in their majors for six credits. Work will be adjusted accordingly.

All studios meet two hours weekly for each credit offered.

Jewelry/Metals

DES 491 three or six credits *
Ceramics V
Prerequisite: DES 392

Encourages advanced students to develop further their personal artistic vision, to be self-critical, and to challenge aesthetic concerns and concepts. Each student will present an oral report on a major artist who was influential in his or her development.

DES 492 three or six credits *
Ceramics VI
Prerequisite: DES 491

During this final semester, students develop and present a body of work in the form of a senior thesis. As part of this presentation, a 45-minute slide lecture is given, relating their artistic ideas, influences, work, and future goals.

DES 293 three credits
Jewelry and Metals I
Prerequisite: Foundation courses for majors; no prerequisite for non-majors.

The basic properties and characteristics of metal. Projects involve learning to saw, form, fabricate, and finish various metals and will include simple stone settings.

DES 294 three credits
Jewelry and Metals II
Prerequisite: DES 293 for majors; permission of instructor for non-majors.

A more indepth study of the properties and characteristics of metal through casting, moldmaking, etching, forging, and sinking shallow forms. Projects using cast forms, multiple elements, simple mechanisms, and functional utensils will be assigned.

DES 393 three credits
Jewelry and Metals III
Prerequisite: DES 294

Detailed study of holloware techniques with raising and seamed construction. Projects will be conducted using chasing/repousse, stone setting, aluminum anodizing, and more advanced mechanisms.

DES 394 three credits
Jewelry and Metals IV
Prerequisite: DES 393

Further exploration of metal form through machining methods, spinning, and electroforming. Projects of a more comprehensive nature will be conducted using previously-learned processes and techniques.

DES 395 three credits
Enameling
Prerequisite: DES 293 or permission of instructor

The techniques and processes for applying vitreous enamels to metal. Students will be expected to view enameling as a means for incorporating color into their existing knowledge of metalworking.

DES 493 six credits
Jewelry and Metals V
Prerequisite: DES 394

Senior-level metalwork requires the development of a contract plan for intensified, self-directed study in conjunction with the faculty. The student shall pursue building a body of work which extends technical proficiency and establishes a firm personal aesthetic.

DES 494 six credits
Jewelry and Metals VI
Prerequisite: DES 493

Continuation of contract plan study. The objective of the final semester is to complete a concise, cohesive body of work which will culminate with an exhibition.

Gen Ed Key

All Design courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.
G Global Awareness

DES 273 three credits **C**
Weaving I: Off-Loom Constructions

Introduction to spinning of yarns from natural fibers using the drop spindle and spinning wheel, followed by simple natural dyeing processes and textile construction rtechniques such as twining, plaiting, card weaving, frame loom tapestry, and basketry. Traditional world-wide use of these techniques will be discussed. Samples and projects of each technique are required. (Formerly DES 274)

DES 274 three credits **C**
Weaving II: Introduction to On-Loom Weaving

Introduction to weaving on the 4-harness floor loom. Design for weaving will focus on color, fiber and pattern investigation. Stripes, twills, color-and-weave techniques, and overshot patterns will be used for woven samples and inventive functional projects such as scarves, garments and upholstery. pattern drafting for weave structure notation will be done by hand on graph paper, and on computer with the INFO VISION weave program in the Textile Design/Fiber Arts CAD Laboratory.

DES 275 three credits **C**
Creative Weaving
For non-majors only

An *open university elective* to introduce weaving on the 4-harness floor loom. Patterns such as twills, plain weave, inlay, overshot, and other surface effects will be used in combination with a variety of fibers to produce samples and projects in the form of garments or other functional textiles.

DES 277 three credits **C**
Textile Design I: Introduction to Print and Dye Techniques

Introduction to fabric dyeing and printing techniques such as immersion dyeing, resist dyeing including batik and paste resist, block print and screen print. Proper use of dyes and dyelab equipment will be presented according to required health and safety guidelines. Samples of various technical experiments will be matted for presentation or logged in a research sketch book. Functional and non-functional formats will be explored for projects. Basic sewing machine techniques will be introduced. (Formerly DES 272, Textile Design II)

DES 278 three credits **C**
Textile Design II: Introduction to Croquis and Repets

Introduction to pattern design on paper including specific rendering techniques such as gouache painting, luma dye, and ruling pen and their use in the textile design industry will be presented. A categorized clippings source book of design and color ideas will be compiled by each student. Projects will include CAD color palette generation and gouache color matching, painted repeats and coordinating needlework craft projects. (Formerly DES 271, Textile Design I)

DES 309 three credits
Textile Styling: Costume
Prerequisite: DES 278 or permission of instructor

Concentrating on garment construction, traditional and fantasy body coverings will be designed using a wide variety of materials. The concept of costume as body ornament is emphasized. Sewing ability not required.

DES 310 three credits
Resist Dyeing
Prerequisite: DES 277 or permission of instructor

Exploration of resist dyeing techniques with emphasis on Japanese and West African traditions and their application to contemporary textile expression. Tied, stitched, wrapped, fold, and clamp techniques as well as paste resists and discharge are investigated. An indigo dye vat is made and maintained. Course is open to students with basic understanding of surface design and dyeing, including majors and non-majors.

DES 370 three credits **G**
History of Textiles

A chronological survey of Eastern and Western world textiles from prehistoric times to the 20th century.
Emphasis of study will be on artistic, religious, socio-economic, technological, and political influences on textile development, Areas of study will include textiles from Asia, Africa, India, Europe, and the Americas. This course will require a written research paper and oral report supplemented with slides, describing a specific textile type chosen from one of the areas surveyed. There will be three exams during the semester with essays, short answer questions, and slide identification. (Combines former course DES 376 with DES 370)

DES 372 three credits
Textile Design for Computer Design
Open to all students

Exploration of computer-aided design for textile design, using the main software programs of the INFO VISION system in the Textile Design/Fiber Arts CAD Laboratory. Students will learn many aspects of design in the print, color palette and coloring programs, weave structure program, 3-D rendering program, and jacquard design program. Students research a number of design sources from the history of textiles and decorative arts, and they create handwoven samples using the AVL computer-generated handloom, to develop computer designs for their portfolio. A portion of the semester's design work will be submitted to national student computer design competitions.

DES 373 three credits
Weaving III

Introduction to multi-harness weave structures concentrating on dimensional surface effects, scale and color changes, and double weave techniques for imagery and layering. Focus will be on the contrasting properties and characteristics of natural wool fibers and man-made fibers. Samples will be matted for portfolio presentation. Major projects will include upholstery products, functional woolens, and various formats that support imagery. The INFO VISION CAD system weave program will be used for yarn design and pattern drafting.

DES 374 three credits
Weaving IV

Multi-layering, dyed and painted warps, and supplementary warp and weft techniques for dimensional and compositional purposes. Using eight to sixteen-harness looms students will develop projects concerned with creative solutions to functional objects and fiber art installations. The CAD jacquard project program will be introduced for one additional design project.

DES 375 three credits
Woven Imagery three credits
Prerequisite: DES 273 or permission of instructor

Various methods of applying color and image to the warp before it is woven. Dip dyeing, ikat resist, discharge, and painted warps will be covered. Weave structures will be chosen to interact with the dyed warps and wefts. Course is open to students with a basic understanding of 4-harness weaving, including majors and non-majors.

DES 377 three credits
Textile Design III: Croquis and Rendering Techniques

Croquis and repeat design on paper from floral and historical sources, including paisley and toile, and from personal design concept derived from ongoing sketchbook, nature drawings and clippings files. Focus will be on rendering styles in gouache, cut paper, water color effects, luma dye and computer-generated effects. The CAD print system will be used for design clean-up, colorings, and new palette creation with color matching in gouache. In addition, needlework and stitchery techniques will be explored as spin-off design projects. (Formerly DES 372, Textile Design IV)

DES 378 three credits
Textile Design IV: Screen Print on Fabric

The process of photographic silk screen printing for repeat pattern designs on fabric is used to develop printed textiles. A variety of fabric and dye types will be used to explore repeat pattern ideas based on personal research and nature drawings. The print CAD print program will be used for color separation, repeat unit trials, and colorings. Individual repeat units will be used for portfolio presentations, and final projects will be in the form of printed yardage fabrics. (Formerly DES 371, Textile Design III)

DES 476 three credits
Senior Fibers I: Fiber Art Thesis

A body of work will be developed to address current issues in fiber art. Traditional and ethnic surface design and dyeing techniques, such as shibori and indigo, will be introduced as vehicles for artistic ideas. Students can choose from a variety of print, dye, woven or mixed media techniques to solve each project. Technical samples will be matted for inclusion in portfolio. Projects will be prepared for formal graduation exhibition at the end of the final spring semester. (Formerly 470, Senior Fibers I)

DES 477 three credits
Textile Design V/Weaving V: Portfolio

The development of appropriate design work in print, paint, or woven media with significant additional work in embroidery, quilting, and other surface embellishment techniques as portfolio coordinates. First half of the semester will be used to explore design sources including documentaries of historical and ethnic textiles, sources from nature, and conversational subject. CAD print, woven and 3-D rendering systems will be used during the second half of the semester to develop colorways and coordinate work for multiple design board presentations focusing on personal idea development, culminating in a major portfolio review at the end of the semester. (Formerly DES 472, Textile Design VI)

DES 478 three credits
Textile Design VI/Weaving VI: Portfolio

Continuation of work concentrating on the development of design work in print, paint, or woven media with significant additional work in needlework and surface embellishment techniques for portfolio coordinates. Design sources including florals, historical and ethnic subjects will be explored. CAD programs will be used to generate or enhance personal ideas in the development of the final portfolio. (Formerly DES 471, Textile Design V)

DES 479 three credits
Senior Fibers II: Fiber Art Thesis

Students develop a body of work in various fiber art media describing a personal style and aesthetic. Sources of inspiration will include historical and contemporary textiles. Projects range from site specific installations to innovative functional objects. Work will be prepared for formal graduation exhibition to be held at the end of the semester. (Formerly 475, Senior Fibers II)

All studios meet two hours weekly for each credit offered.

Wood/Furniture Design

DES 201 three credits **C**
Wood/Furniture Design I
3 studio hours

Introduction to wood as a material and the proper use of hand tools and woodworking machinery, focusing on box construction techniques and appropriate joinery techniques.

DES 202 three credits **C**
Wood /Furniture Design II

Continuation of DES 201 focusing on table construction techniques and simple finishing methods.

DES 301 three credits
Wood/Furniture Design III
Prerequisite: DES 202 or permission of instructor

An intermediate-level course focusing on furniture design concepts and construction methods, including carcase and frame techniques.

DES 302 three credits
Wood/Furniture Design IV
Prerequisite: DES 301 or permission of instructor

Continuation of DES 301, focusing on chair-making techniques from both a conceptual and a traditional viewpoint.

DES 401 six credits
Wood/Furniture Design V
Prerequisite: DES 302

An advanced-level course continuing practices in furniture design concepts and construction methods, focusing on large-scale furniture projects, and emphasizing the use of plywood and related fabricated material, veneering techniques, and advanced finishing methods—as well as the design applications appropriate to these processes.

DES 402 six credits
Wood/Furniture Design VI
Prerequisite: DES 401

Continuation of DES 401. Lectures and presentations will address issues in professional practice. Upon acceptance of a project proposal, students present a body of work in the form of a senior thesis.

Fine Arts

In Fine Arts, we do not teach artists; rather we teach students to become artists. Our programs are structured on the belief that every artist speaks a common language. Our goals are:

- to prepare students to become professional practitioners in the disciplines of painting, printmaking, or sculpture, as well as equip them for other art-related careers, by offering high quality education and training in the visual arts

- to give students a thorough understanding, appreciation, and competence in drawing from life through a rigorous four-year drawing requirement which emphasizes and underscores the importance of drawing skills as universal to all visual arts disciplines

- to encourage students to pursue their personal directions in art, based on a firm grounding in the fundamentals of their field

- to provide those students who wish to continue their education at the graduate level with qualifications for entry and the values which will contribute to their success

Our ultimate objective is to develop respect for learning and the creative act, to enable our graduates to contribute to human culture with confidence and authority.

Faculty and Fields of Interest

Richard J. Creighton sculptor

Willoughby R. Elliott painter, printmaker

Severin Haines painter

Laurie Kaplowitz painter

Anne Leone painter

Eric Lintala sculptor

Bryan McFarlane painter

Anthony J. Miraglia (chairperson) painter

Marc St. Pierre (foundation director) printmaker/photographer

Kurt Wisneski printmaker

Majors in Painting/2D Studies and Sculpture/3D Studies BFA degree

The Department of Fine Arts offers two majors: Painting/2D Studies and Sculpture/3D Studies. Students who choose one of these disciplines enter a rigorous, four-year program. As its foundation, each major has a structured, sequential drawing requirement which provides a rich visual vocabulary and a basis for visual problem solving. The department teaches the fundamental principles and skills of each discipline, enabling students to acquire the knowledge needed to produce a coherent, personal body of creative work.

Painting/2D Studies and Sculpture/3D Studies students have space, facilities, and equipment which places the programs among the more desirable ones in the country. Juniors and seniors work in private studio areas. Each student receives individual attention from faculty committed to teaching excellence as well as the critical support which comes from working within a group. Students know that their instructors are active and respected artists who bring first-hand, up-to-date knowledge to their studios. Academic excellence is recognized annually by department and college awards.

Fine Arts also has an active Visiting Artist Program which brings well-known artists to the university on a regular basis to discuss their work, conduct workshops, and assess developments in the art world. The Department and College host or participate in many on and off-campus exhibitions. These experiences prepare students to enter the competitive, exciting world of the visual arts with confidence.

Requirements for Painting/2D Studies and Sculpture/3D Studies Majors

		Semester Credits	
		First	**Second**
First Year			
FOU 101, 102	Visual Arts Colloquium	1	1
FOU 110, 112	Foundation: Structural/Life Drawing	3	3
FOU 114, 115	2D Workshop/Visual Language	2	2
FOU 124, 125	3D Concepts/3D Workshops	2	2
ARH 125	Visual Culture: Renaissance to Modern Art	3	
ARH 150	Visual Culture: Modern to Contemp. Art		3
ENL 101, 102	Critical Writing and Reading I, II	3	3
	Gen Ed E, D, or G/Social Science electives	3	3
		17	**17**
Second Year			
FIA 221, 222	Figure Drawing I, II	3	3
ARH 200	Visual Culture: Ancient, Medieval, World Art	3	
	Major Studios	3	3
	Studio Support*	3	3
	Gen Ed E, D, or G/Hum or Soc Sci elective		3
	Gen Ed D, G, W/Literature electives	3	3
		15	**15**
Third Year			
FIA 321, 322	Figure Drawing III, IV	3	3
FIA 311	Composition and Design		3
	Major Studios	6	3
	Studio Elective	3	
	Gen Ed/Natural Science Elective		3
	Art History Elective	3	
	Mathematics elective		3
		15	**15**
Fourth Year			
FIA 421,422	Drawing V	3	
	Major Studios/Visual Thesis	3	6
FIA 400	Senior Seminar	3	
	Gen Ed E, D, or G/Hum or Soc Sci elective	6	
	Gen Ed/Natural Science Elective		3
	Studio Elective **OR** Free Elective		3
	Free Elective		3
		15	**15**
	Total credits:		**124**

Specific Requirements for the Different Majors

All Fine Arts Majors are required to take one 300-level Art History elective in addition to the ARH 101, 102, and 103 requirements. Students are urged to take as much Art History as possible.

***Studio Support: Painting/2D Studies Majors:** are required to take one 200-level sculpture course and one 200-level printmaking course.

***Studio Support: Sculpture/3D Studies Majors:** are required to take one 200-level painting course and one 200-level printmaking course.

Studio Electives
Credits are fulfilled by taking studio courses offered by the following departments; Art Education, Design, and Fine Arts.

General Education Requirements
General Education requirements, applicable to the class of 2000 and beyond, are defined elsewhere in this catalogue.

Distribution Requirements
Credits in the categories listed may be selected as follows.

Humanities: Art History, English, Foreign Language, History, Literature, Music, Philosophy.

Natural Sciences: Biology, Chemistry, Physics, Textile Science

Social Sciences: Anthropology, Economics, Political Science, Psychology, Sociology, and Women's Studies (those with social science distribution).

Courses in subject areas not listed above may be used to fulfill distribution requirements with approval of Fine Arts chairperson.

Free elective
Any course listed will satisfy this requirement

Fine Arts Courses

Gen Ed Note

All Fine Arts courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.

All studio courses meet two hours weekly for each credit offered.

FIA 221, 222 three credits each **C**
Figure Drawing I, II
Prerequisites: FOU 110, 122

The human figure, its form, mass, and proportions, is studied in relation to its environment. Live models are used.

FIA 223, 224 three credits each **C**
Nature Drawing I, II
Prerequisite: FOU 112

Problems in drawing based on direct observation of flowers, plants, and other natural forms.

FIA 225 three credits **C**
Object Drawing I
Prerequisite: FOU 112

Explores a variety of problems involved in drawing natural as well as artificial objects and perspective.

FIA 241, 242 three credits each **C**
Painting I, II
Prerequisite: FOU 112

This is an introductory course in beginning painting. The technique of oil is predominant; however, other plastic media are also considered. Concepts of design, composition, and color are studied. The development of the intuitive and creative ability of the individual is given careful attention.

FIA 243 three credits **C**
Watercolor

An introduction to the medium of water color from initial conception to final image. There will be intensive personal experimentation with techniques.

FIA 281 three credits **C**
Printmaking I: Silkscreen
Corequisites: FIA 221, 241

A studio course in silkscreen, in which various stencil-making processes will be introduced. Color and shape relationships, as well as artistic values and techniques will be stressed.

FIA 283 three credits **C**
Printmaking I: Intaglio
Corequisites: FIA 221, 241

A studio course in the techniques of intaglio. Artistic values as well as techniques will be stressed.

FIA 284 three credits **C**
Printmaking I: Etching
Co-requisites: FIA 221, 241

A studio course in the techniques of etching. Artistic values as well as techniques will be stressed.

FIA 285 three credits **C**
Printmaking I: Lithography
Co-requisites: FIA 221, 241

An introduction to the printmaking process of lithography on stone, and aluminum plate. The development of artistic values as well as technical facilities will be stressed.

FIA 286 three credits **C**
Printmaking II
Prerequisites: FIA 283, 285

Continuation of sophomore studies in printmaking (etching and lithography). This course builds on first semester lithography and etching printmaking and applies that basic knowledge on advanced concepts.

FIA 287 three credits **C**
Printmaking: Monotype
Prerequisites: FOU 110, 112

A studio course exploring the monotype, or unique print, that applies artistic aesthetics in making painterly prints.

FIA 288 three credits **C**
Photo Processes and Printmaking
Prerequisites: FOU 101, 112, 114, 115

Methods of image-making and producing multiples using non-silver processes. Students will explore the use of positive and negative transfer materials affecting non-silver print processes and will be expected to expand upon the problems introduced in traditional photography and printmaking classes. No camera required.

FIA 291 three credits **C**
Sculpture I
Prerequisite: Sophomore art major standing; or permission of department

A structured introduction to basic techniques including clay modeling from the figure, used of plaster, wood, welding, mold making, and casting. The course should enable the beginning student to explore media and gain fundamental skills with them. Content, form and technique are discussed in relation to the work.

FIA 292 three credits **C**
Sculpture II

Continuation of FIA 291.

FIA 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

FIA 300 three credits
Advanced Color Theory
Prerequisites: FOU 114, 115

This studio course discusses the work of major color theorists and applies their theories in a series of class assignments. The course proceeds with regular weekly lectures illustrated by slides and reproductions. All classwork is reviewed in weekly critiques. The theorists discussed include Munsell, Ostwald, Itten, Albers and others. Also discussed are structural usage of color, color psychology, color history, color in modern art and the various color media.

FIA 310 three credits
Visual Language of Art
3 lecture hours

Provides the student with a basis for evaluation of paintings and sculpture through the use of slides, basic problems, lectures, and discussions.

FIA 311 three credits
Composition and Design
Prerequisites: FIA 222, 242

An advanced consideration of design principles is applied to weekly assigned drawing problems. Resourcefulness in technical treatment and imaginative approach are encouraged.

FIA 312 three credits
Composition

Continuation of FIA 311.

*Student majors are required to take any of the 300- and 400-level courses in their majors for six credits. Work will be adjusted accordingly.

FIA 321 three credits
Figure Drawing III
Prerequisite: FIA 222

Continuation of Figure Drawing I with more attention given to composition and individual approaches. New techniques and media are introduced.

FIA 322 three credits
Figure Drawing IV

Continuation of FIA 321.

FIA 341 three credits
Painting III
Prerequisites: FIA 222, 242

Intermediate painting problems related to the individual, aimed at improving the student's ability to compose in a professional manner. The student works from the figure, nature, and still life with an emphasis toward his/her personal development.

FIA 342 three credits
Painting IV

Continuation of FIA 341.

FIA 380 three credits
Relief Printmaking

Construction of images by printing from various surfaces. Traditional woodcuts are featured as well as experiments with other possibilities of "Relief Type" surfaces.

FIA 381 three or six credits*
Printmaking III
Prerequisites: FIA 222, 281, 283, 285

A studio course aimed at developing a high degree of technical articulation with printmaking techniques of the students' choice as they relate to the image making process.

FIA 382 three or six credits*
Printmaking IV

Continuation of FIA 381.

FIA 391 three or six credits*
Sculpture III
Prerequisite: FIA 292

A course designed for those having a deeper interest in sculpture. Intended to deepen and refine skills in one or more media. The beginning of the student's development of a sculptural idea in an open workshop. Students who are majoring in sculpture can register for six (6) credits. The work required will be adjusted accordingly.

FIA 392 three or six credits*
Sculpture IV

Continuation of FIA 391.

FIA 400 three credits
Senior Seminar
3 lecture hours

Prepares the student in Fine Arts for the field they will be entering. The course deals with portfolio preparation, resumes, contracts, and the business aspects of the art world.

FIA 421 three credits
Drawing V
Six studio hours
Prerequisite: FIA 322

A drawing course intended to help the student correlate previous drawing experiences. More emphasis is placed on individual expression and interpretation.

FIA 422 three credits
Drawing VI

Continuation of FIA 421.

FIA 441 three or six credits*
Painting V
Prerequisite: FIA 342

Advanced problems in painting with emphasis on personal development. There are individual criticisms and seminar discussions of contemporary problems in painting.

FIA 442 three or six credits*
Painting VI
Prerequisite: FIA 441

Continuation of FIA 441 with the student gradually working more independently. Criticisms applied even more on an individual basis.

FIA 481, 482 three or six credits each*
Printmaking V, VI
Prerequisite: A minimum of 15 credits in printmaking

An advanced studio course in printmaking aimed at the further development of a professional attitude toward the printmaking techniques as a means of artistic statement.

FIA 491 three or six credits*
Sculpture V
Prerequisite: FIA 392

A studio course stressing individual concentration with sculptural media and processes for the advanced student. Students who are majoring in sculpture can register for six (6) credits. The work required will be adjusted accordingly.

FIA 492 three or six credits*
Sculpture VI

Continuation of FIA 491. Students who are majoring in sculpture can register for six (6) credits. The work required will be adjusted accordingly.

FIA 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

FIA 196, 296, 396, 496 variable credit
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

FIA 498, 499 three credits each
Special Topics in Sculptural Materials and Techniques I, II
Prerequisites: FIA 291 and 292, or permission of instructor (majors); permission of instructor (non-majors)

An in-depth exploration of a specific sculptural concern. A single topic will be offered each semester. Special topics include Bronze Casting, Aluminum Casting, Stone Carving, Installation/Performance Art, The Figure, Cast Paper, and Site-Specific Sculpture.

Graduate Courses in Visual Design/Artisanry/Fine Arts

Note: Undergraduates are prohibited from taking graduate courses. See the *Graduate Catalogue* for graduate general and program requirements.

ART 505 three credits
Graduate Seminar I

A forum for exploring issues in contemporary art and design, and for learning from peers about recent developments in a variety of art fields. A broad range of critical writings are discussed.

ART 506 three credits
Graduate Seminar II

Continuation of ART 505.

ART 509 nine credits
Major Graduate Studio

Intensive studio work and research in the student's area of concentration. Students investigate the aesthetic, conceptual, technical, and structural properties of chosen media through an individualized study program developed under the guidance of their major advisors. Through questioning and experimentation, students are expected to consolidate technique with the development of strong, expressive ideas. Informal critiques and individualized discussions are scheduled. The 9 credits in this course may be taken either as a single block or divided into groups of 6 or 3 credits each. Units may be assigned as either Independent Study (ART 595) or Directed Study (ART 596). In an Independent Study, the student declares the content, context, quantity of work, and meeting times agreed to by a sponsoring faculty member. In a Directed Study, the faculty member follows a specific course syllabus.

ART 510 nine credits
Major Graduate Studio

Continuation of ART 509.

ART 511 three credits
Major Graduate Studio

Continuation of ART 510.

ART 512 six credits
Visual Thesis

The preparation of a body of conceptually focused, original, and innovative visual work for exhibition or presentation. Graded A-F.

ART 515 three credits
Writing Seminar

Organizational tools for thesis preparation are suggested, and theses of recent graduates and other writings are analyzed in terms of content and style. Writing begins with a revision of the thesis proposal as the introduction to the thesis. A preliminary draft of the thesis is prepared by the end of the semester. Significant class time is devoted to group critiques of student writing.

ART 516 three credits
Written Thesis

The completion of the written thesis, a verbal explanation of the visual thesis which includes research of sources and a discussion of pertinent aesthetic issues, materials, and processes. Graded A-F.

ART 520 three credits
Philosophy of Art

Themes to be discussed include the nature of form and expression in art, the similarities and differences between the artist's relation to the work of art and the spectator's, the difference between linguistic and visual arts, and the social function of art. The works of a few major philosophers will be compared to demonstrate alternative points of view.

ART 531 three credits
On Creativity
Basic patterns of conscious and unconscious information processing underlying artistic, humanistic, and scientific inspiration, discovery, and invention.

ART 590 three credits
Instructional Development

Provides the fundamental knowledge needed to develop course content, curriculum development, and project planning for studio classes taught in the foundation program.

ART 595 one to nine credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

ART 596 one to nine credits
Directed Study
Prerequisites: Permission of the instructor, graduate director, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Music

The Bachelor of Arts in Music allows intensive study in applied music, music education, music technology, theory and music history. All majors complete a core curriculum of music theory, music history, musicianship, and functional piano.

Graduates of the major program have a variety of avenues open to them, from teaching and performing to electronic music (composition, sound design, and audio recording), advanced study, and careers in related fields. The department urges its students to develop interdisciplinary programs with other university departments.

The Music Department sponsors an a Guest Artist Recital Series, a Faculty Recital Series, a Guest Artist Lecture Series, and many student ensemble and solo recitals.

A collaborative program with the New Bedford Symphony Orchestra permits qualified students to play with the orchestra and to participate in their outreach programs.

Faculty and Fields of Interest

Eleanor Carlson (chairperson) piano, music history

John Laughton (dean of the college) clarinet, theory, music history

Adjunct and Part-Time Faculty

Melody Albanese violin

Phyllis Aronson flute

Todd Baker bass, jazz studies, contemporary ensemble

Robert Brink violin

Richard Britto saxophone, jazz studies

Wayman Chin piano, music skills

Gene Crisafulli stage band, concert band, trumpet, brass methods, brass ensemble

Beth Denisch theory, orchestration

Jamie Eckert percussion, percussion methods, percussion enseble, pep band

Emmanuel Feldman cello

Pascale Delache-Feldman bass

Mychal Gendron classical guitar, class guitar

David Gries jazz theory

Tim Harbold chorus, Spinners vocal ensemble

John Harrison jazz piano, jazz studies, jazz ensemble

Martha (Sandy) Kiefer cello

William Kingsland trombone, tuba, brass methods

Semenya McCord jazz studies, jazz voice, vocal ensemble

Robert Marlatt French horn

Charlene Monte string methods

Jane Murray oboe

Marie Nelson music education, class piano

Richard Nelson music education, conducting, woodwind methods

Karyl Ryczek voice studies, vocal ensemble, voice class

Charles Serba violin

Carl Stone jazz guitar, guitar ensemble

Susan Wood bassoon

Entrance to the Major

All candidates must pass an entrance audition and take an advisory exam to determine their potential and background in music. Candidates are expected to have some facility on their instrument and, especially in the case of theory candidates, to have some preparation in fundamental concepts of music theory.

Distribution/Gen Ed Requirements

Music majors are subject to the General Education requirements (if graduating in 2002 or beyond) and to the following distribution requirements:

Critical Writing and Reading I, II: six credit hours (ENL 101, 102)

Foreign language: six credit hours.
Credits may be taken in Italian, French, or German. The requirement is to be fulfilled by two semesters in the same language.

Natural Science: six credit hours
Physics of Music is recommended. Courses may be taken in the Biology, Chemistry, and Physics Departments or other departments with approval by the Music Department Chairperson.

Social Science: six credit hours
Courses may be taken in economics, political science, psychology, sociology, or education.

Humanities: twelve credit hours
Six credits in Western Civilizations or World Civilizations (HST 101, 102 or HST 103, 104) and three credits in Art History (ARH 102); and six credits in literature (either English or a foreign language).

Requirements

		Semester Credits	
		First	**Second**
First Year			
MUS 171, 172	Theory I, II	3	3
MUS 109, 110	Music Skills I, II	2	2
MUS 165, 166	Class Piano I, II	2	2
	Applied Instrument/Voice	3	3
ENL 101, 102	Critical Writing and Reading I, II	3	3
HST 101, 102	History of Western Civ. I, II **OR**	3	3
HST 103, 104	History of World Civ. I, II		
		16	**16**
Second Year			
MUS 271, 272	Theory III, IV	3	3
MUS 209	Music Skills III	2	
MUS 203, 204	Survey of Western Music	3	3
MUS 265	Class Piano III	2	
	Gen Ed/Social Science Electives	3	3
	Free Electives*	3	6
		16	**15**
Third and Fourth Years			
	Music History (Period Courses)**	3	3
	Music Theory Electives**	3	3
	Gen Ed/Literature Electives	3	3
	Gen Ed/Natural Science Electives	3	3
	Foreign Language Electives	3	3
	Free Electives*	15	12
	Total credits:		**120**

* Of the 36 free credit hours a minimum of 30 credits must be in the humanities, social sciences and/or natural sciences. It is recommended that at least 3 of these credits be in Art History. Six credits may be music courses.

** Music Electives must be chosen from non-applied 300 and 400 level courses.

All music majors should enroll in one major performance ensemble each semester. These ensembles will include Chorus, Concert Band, and Stage Band. These will be counted as free electives.

All students may enroll in applied studies. Applied courses will be counted as free electives.

Performance Workshop (MUS 291) is a non-credit course required every semester of all music majors.

Minimum Acceptable Course Grades/Progress Requirements

The Music Department requires a minimum acceptable grade of C (2.000) in each music course that will be included in fulfillment of music major and minor requirements. Students wishing to pursue Music Education Certification must maintain a 2.700 grade point average and receive at least a B- in each required music course.

Students will have their progress monitored by the music department faculty in semester-end juries. Information on these criteria and other departmental regulations is available from the department office.

Music and the Business Minor

Students interested in music management or other aspects of the music industry may enroll in the Business Minor program. Details on the various business options are available from the Music Department or from the Business College. (See requirements and courses under the College of Business.)

Music Education Certification

The Music Department is approved by the Commonwealth of Massachusetts to offer Certification in Music Education at both the elementary level (grades N-9) and the secondary level (grades 5-12). Reciprocal agreements allow this certification to be valid in many states in addition to Massachusetts. This program is open to all qualified baccalaureate music majors. It is also available to individuals with degrees who wish to gain certification in music education.

Required for admission to the program: at least a 2.7 grade point average; successful completion of Music Skills III; sucessful completion of Sophomore Workshop; an interview with the Music Education Director; and a sincere interest in becoming a teacher.

Music Education Requirements

Year	Course	Prepracticum hours	Credit hours	Counts also as
Freshman	EDU 205 Human Development **OR** PSY 201 Child Psychology **OR** PSY 215 Adolescent Psychology		3	Gen Ed/Soc. Sci.
Sophomore	Workshop	15	0	
Sophomore through Senior	Instrumental Methods (Select four) MUS 215, 216, 217, 218, 117, 169		4	
Junior/Senior	MUS 316 Music Education N-9	30	3	Music elective
	MUS 317 Music Education 5-12	30	3	Music elective
	MUS 330 Conducting/Orchestration		3	Music elective
	MUS 355-360 Applied Study for Theory Majors		(4)	
Before or after graduation	EDU 414 or 415 Elementary/Secondary Practicum	15 weeks, full time	12	
	EDU 416 or 417 Elementary/Secondary Workshop		3	

The BA degree with a major in Music is awarded upon satisfactory completion of all requirements as described herein, and the program of courses in teacher education makes a student eligible for certification. Teacher certification as an Music Specialist is granted upon satisfactory completion as well of the Massachusetts Teacher Tests.

Music Minor

A Minor in Music is open to all UMass Dartmouth students who meet the Music Department entrance requirements. The program is designed for talented students who desire an opportunity to develop their musical abilities. It will also allow students who are seeking an eventual major in music to begin serious study in a challenging atmosphere.

Students may choose an area of concentration such as applied studies (piano, voice, flute, etc.), theory, or jazz studies. Each student's program is then built around this area of concentration in consultation with a departmental advisor. In addition, certain basic courses are required of all students. Students demonstrating a special ability or interest may, with approval of the full music faculty, develop individualized programs through independent study. Graduating seniors who have successfully completed the music minor will have this fact stated on their official transcripts.

Requirements

Applied Emphasis

For students whose area of concentration is piano, voice, or orchestral instruments.

	Credits
MUS 171, 172 Theory I, II	6
MUS 203, 204 Survey of Western Music I, II	6
MUS 165-166 Class Piano*	4
Applied Voice/Instrument	12
Total	**28**

Students with an applied-emphasis minor are required to participate in at least one student recital. This recital must be scheduled with the approval of the applied instructor.

Students with applied emphasis are also required to participate in a major ensemble during at least one semester. Major ensembles include chorus, con-cert band, and stage band.

Non-Applied Emphasis

For students whose area of concentration is jazz studies or theory.

	Credits
MUS 171, 172 Theory I, II	6
MUS 203, 204 Survey of Western Music I, II	6
MUS 165, 166 Class Piano*	4
Applied Voice/Instrument	6
Music Concentration**	6
Total	**28**

** Jazz concentration minors must include Jazz Theory and Improvisation for three credits and African-American Music for three credits. Theory concentration minors must include MUS 271 and MUS 272 for six credits.

* Class piano is not required of piano students or other students able to pass the piano proficiency exam, which must be passed to complete a music minor. Additional levels of class piano may be taken for academic credit, but only two may be applied to the music minor.

Courses Primarily for Non-Majors

MUS 101 three credits **C, G**
Introduction to Music I

Presents a basic music vocabulary and develops intelligent discrimination in the listener through study and analysis of outstanding works from Gregorian Chant to the present, including music of diverse cultures. Emphasis is also placed on the relationship of the historical development of music to parallel movements in art, drama, philosophical thought, etc.

MUS 102 three credits **C**
Introduction to Music II

Continuation of MUS 101.

MUS 103 three credits
Introduction to World Music

Explores the musical traditions of various cultures with respect to their historical, social, and cultural backgrounds. This course also explores different approaches to musical organization, musical practice, and significant aspects of style within a world music setting.

MUS 106 three credits **C**
Art of Rock: History of Rock Music

Multicultural sources of rock, examined through text-related lectures, listening to recordings, and viewing documentary videos. As an overview for non-music majors, the course is intended to broaden students' socio-cultural perspectives. The diversity of American popular music offers a direct reflection of, and at times a focus for, many factors in identifying and appreciating subcultures of age, ethnicity, gender, race, region, and religion.

MUS 107 three credits **C**
Fundamentals of Theory

A music course for beginners with no theory background. The study of the elements of music, systems of sounds, pitch, meter, rhythm, note values, dynamics, manuscript, etc. Identification, nomenclature, and performance will be carried out through a programmed text, lecture and practical application through singing and playing. This is a foundation course in theory and composition.

Gen Ed Note

All Music courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.
G Global Awareness

Courses Primarily for Music Majors and Minors

History

MUS 125 three credits **C**
Jazz: The Listener's Guide

Study of jazz based on listening and class discussion. The course is intended to increase awareness of the roots of jazz within the African-American community and of the cross-cultural fertilizations occurring throughout its more recent history. Although academic and technical studies of jazz were established in the 50s, it is only within the past fifteen years that these studies have led to the recognition of jazz as a truly valued American art form.

MUS 202 three credits
The Mind's Ear

Explores music/sound and its relationship to why we hear what we hear, how our bodies react to what we hear, archetypal emotional states, and how we perceive music. This course is open to all students who are interested in the relationship of music to themselves and their environment.

MUS 205 three credits
Introduction to Music Therapy

Fundamentals of music therapy, including historical and theoretical perspectives. Brain functioning is studied as a key to understanding music therapy through simple models and case studies. This course is open to all students interested in the multi-faceted uses of music therapy.

MUS 229 three credits **C**
Survey of the Symphony

The development of the symphony as traced from the eighteenth century to the present day.

MUS 231 three credits **C**
Beethoven

Knowledge of the genius through his composition.

MUS 232 three credits **C**
Johann Sebastian Bach

A study of the great Baroque master through historical and musical examination.

MUS 235 three credits **C**
Survey of American Music

American music from the Pilgrims to the present, including Folk Music, Jazz, and show tunes.

MUS 238 three credits **C**
Music and the Related Arts: Paris (1890-1930)

The music of the period investigated in relationship to the other arts. Debussy, for example, was labeled an impressionist because of the circumstances linking him to the impressionist painters. Debussy, however, was also influenced by *art nouveau* and by the symbolist poets. Other styles to be explored will include Satie's connections with dadaism and surrealism and Stravinsky's close alliance with ballet. Although listening to music will be of primary importance, art slides, poetry readings, and films of ballets will be used as much as possible. Guest lecturers will also be called upon as the occasion arises.

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MUS 461 two to six credits
Advanced Study in Music History
Prerequisites: MUS 203, 204 and two of MUS 337, 339, 341, 343

Intensive study of research on a special topic in Music History under the direction of a faculty member.

In addition, **Applied Music courses** are available for non-majors as well as majors.

Courses are available in piano, guitar, saxophone, voice, orchestra instruments, and, for those who have met the prerequisites, electronic music.

They are listed later in this section of the catalogue.

MUS 203, 204 three credits each **C, G**
Survey of Western Music I, II
Prerequisites: MUS 171, 172

Survey of music from the middle ages to the present. Listening and analysis will be stressed, but historical background will also be discussed. The course will include exposure to music of diverse cultures.

MUS 242 (AAS 242) three credits **C**
African-American Music
Prerequisite: MUS 107 or equivalent

General survey of African-American music in the U.S. from its origins to the present. The course introduces the student to the vast and rich expanses of black musical culture, both from a musical and socio-historical standpoint. The course emphasizes jazz, its history, and an analysis of the contributions of its major innovative figures.

MUS 337 three credits
Music of the Twentieth Century
Prerequisites: MUS 203, 204; or permission of instructor

Trends in twentieth century music, embracing analysis of representative works from the period and their relationships to the existing culture.

MUS 339 three credits
Music of the Romantic Period
Prerequisites: MUS 203, 204

A survey of the stylistic developments and major composers of the nineteenth century.

MUS 341 three credits **C**
Music of the Classical Period
Prerequisites: MUS 203, 204

An in-depth survey of musical developments from 1720 to 1827. Emphasis will be on the works of Haydn, Mozart, and Beethoven.

MUS 343 three credits **C**
Music of the Baroque Period
Prerequisites: MUS 203, 204

Major stylistic developments in music from 1600 to 1750. Monteverdi to Bach and Handel.

MUS 395 three credits
Seminar in Music History
Prerequisites: MUS 203, 204

Seminar on selected topics in Music History.

Theory

Gen Ed Note

All Music courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.
G Global Awareness

MUS 109, 110 two credits each **C**
Music Skills I, II
Prerequisite: MUS 107 or equivalent

An intensive study and practice of the reading, performance, notation and dictation of rhythm, meter, intervals, melody, and chords. Useful for all singers and instrumentalists.

MUS 171 three credits **C**
Music Theory I
Prerequisite: MUS 107 or equivalent

An introduction to tonal harmony, including elements of pitch and rhythm, triads, voice leading and harmonic progression. This is the first of four courses in music theory required of all music majors.

MUS 172 three credits **C**
Music Theory II
Prerequisite: MUS 171

Continuation of MUS 171, exploring functional harmonic practices. The uses of non-chord tones, triadic inversions, seventh chords and simple chromaticism will be studied.

MUS 209, 210 two credits each **C**
Music Skills III, IV
Prerequisites: MUS 109, 110

Continuation of MUS 109 and 110.

MUS 220 three credits **C**
Jazz Theory and Improvisation
Prerequisites: MUS 171, 172, and instrumental proficiency

Two hours of class theory and a one to two hour practicum in jazz improvisation techniques. A course covering the study of jazz scales, chord structures, nomenclature and progression patterns. There will also be some elementary arranging. The theoretical studies will be put into practice in weekly performance session.

MUS 223, 224 three credits each **C**
Electronic Music Studio Techniques I, II
Prerequisite: MUS 107 or equivalent

Introduction to basics of sound, electronic music equipment, and MIDI sequencing. Lectures, readings, and studio projects are included. Rudimentary music theory knowledge is necessary, although keyboard knowledge is not required.

MUS 271 three credits **C**
Music Theory III
Prerequisite: MUS 172

An exploration of the chromatic aspects of tonal harmony, including secondary functions, modulation, and mode mixture. Formal structures such as binary and ternary form will also be studied. Compositional exercises will be required.

MUS 272 three credits **C**
Music Theory IV
Prerequisite: MUS 271

An expansion of harmonic vocabulary, including ninths, elevenths, and other higher-order chords, chromatic procedures of the nineteenth century and extensions of harmonic principles into the twentieth century. Compositional exercises will be required.

MUS 315 three credits
Jazz Arranging
Prerequisite: MUS 212

A course covering various aspects of arranging charts for swing, jazz, rock, marching, or other pop style bands.

MUS 321 three credits
Microcomputers in Music
Prerequisite: MUS 223 or permission of instructor

Developing facility in using a variety of music-oriented microcomputer software and hardware in a creative, compositionally-oriented framework. Digital sampling techniques, digital sound processing, wavetable synthesis and aspects of microcomputer architecture will be explored. In addition to readings, quizzes and lectures, there will be a minimum of three hours studio work per week.

MUS 322 three credits
MIDI Composition Techniques
Prerequisite: MUS 223 or permission of instructor

Developing facility in using MIDI (Musical Instrument Digital Interface) hardware and related software in a compositional framework. In addition to readings, quizzes and lectures, there will be a minimum of three hours studio work per week.

MUS 324 three credits
Synthesizer Programming Techniques
Prerequisite: MUS 223 or permission of instructor

Exploration of sound design. Advanced programming techniques on analog and digital synthesizers, sound design, and the use of editor/librarian programs are explored. In addition to readings, quizzes and lectures, there will be a minimum of three hours studio work per week.

MUS 325 three credits
Recording Techniques
Prerequisite: MUS 223 or permission of instructor

Developing facility in using various digital recording media. The course provides detailed exploration of relevant equipment, recording and microphone techniques, audio post production with Pro Tools, and audio CD production. In addition to readings, quizzes and lectures, there will be a minimum of three hours group recording or individual studio time per week.

MUS 330 three credits
Principles of Conducting/Orchestration
Prerequisite: Equivalent of Junior standing in Music, or permission of instructor

An in-depth study of conducting techniques appropriate for choral and instrumental ensembles combined with the study and development of score reading skills; study of instrumental ranges, combinations, and functions with appropriate scoring projects. Analysis of selected scores as an integral part of both the study of orchestration and the development of serious interpretative skills needed by the conductor. New course combing former courses MUS 313 and 340.

MUS 333, 334 three credits each
Theory Composition
Prerequisite: MUS 212

A working survey of the theory and analysis of free and dodecaphonic atonality, neo-modality, quartral harmony and extended tonality in the works of major composers such as Schoenberg, Webern, Ives, Bartok and Hindemith. Students will produce exercises in these techniques and forms. During the second semester, serial, aleatory, textural, cluster, graphic, and other recent procedures in composition will be examined.

MUS 397 three credits
Seminar in Music Theory
Prerequisite: MUS 212 or MUS 272

A seminar on selected topics in Music Theory.

MUS 412 three credits
Form and Analysis Seminar
Prerequisite: MUS 272

Selected, exemplary works from the pre-tonal, tonal and post-tonal periods will be examined in detail. Advanced techniques in analysis will be explored. Much of the emphasis will be on deducing internal theoretical structures from the works and comparing and relating these to traditional theoretical systems.

MUS 493 two to six credits
Advanced Study in Composition
Prerequisites: MUS 333, 334

Intensive composition studies on an individual basis under the direction of a member of the Music faculty.

MUS 497 two to six credits
Advanced Study in Music Theory
Prerequisites: MUS 412

Intensive study or research on a special topic in music theory under the direction of a member of the music faculty.

MUS 215 one credit **C**
String Methods
Prerequisite: Music major, sophomore standing

Designed for those interested in teaching in the secondary school system. It will give a basic understanding of all string instruments and the techniques involved in playing them.

MUS 216 one credit **C**
Percussion Methods
Prerequisite: Music major, sophomore standing

Designed for those interested in teaching in the secondary school system. It will give a basic understanding of all percussion instruments and the techniques involved in playing them.

MUS 217 one credit **C**
Woodwind Methods
Prerequisite: Music major, sophomore standing

Designed for those interested in teaching in the secondary school system. It will give a basic understanding of all percussion instruments and the techniques involved in playing them.

MUS 218 one credit **C**
Brass Methods
Prerequisite: Music major, sophomore standing

Designed for those interested in teaching in the secondary school system. It will give a basic understanding of all percussion instruments and the techniques involved in playing them.

MUS 316 three credits
Teaching Children Music, Grades N-9
Prerequisites: MUS 209 or permission of instructor

A study of children's musical experiences in learning rhythm, in singing, in reading music, in developing listening skills, and in classroom instrumental activities coupled with pre-practicum observation in local schools. For UMass Dartmouth students concentrating in Education.

MUS 317 three credits
Teaching Music in Secondary Schools
Prerequisite: MUS 209 or permission of instructor

The methods and materials of the complete music programs in Middle and High schools with required observation for pre-practicum.

MUS 320 three credits
Keyboard Experiences for Teachers

The piano and electronic keyboards used in teaching, including: music theory adapted to keyboard harmonizations of basal series and curriculum materials, stylistic figurations, musicianship and creativity. On hand activity to develop skills and confidence is of prime importance.

Applied Music

Gen Ed Note

All Music courses satisfy Cultural/Artistic Literacy; lower division courses are marked **C**, but advanced courses are eligible as well.
G Global Awareness

MUS 117 one credit
Class Guitar I

Class guitar for beginners or those with slight experience. Emphasis is on learning to play simple, notated melodies and to learn chord fingerings for accompanying. Workshops on writing melodies will be included.

MUS 118 one credit **C**
Class Guitar II

Continuation of MUS 117.

MUS 149, 150, 249, 250
three credits each **C**
Applied Vocal Studies I, II, III, IV
Prerequisite: Permission of instructor

Weekly private lessons.

MUS 151, 152, 251, 252
three credits each **C**
Applied Keyboard Studies I, II, III, IV
Prerequisite: Permission of instructor

Weekly private lessons.

MUS 153, 154, 253, 254
three credits each **C**
Applied Instrumental Studies I, II, III, IV
Prerequisite: Permission of instructor

Weekly private lessons.

MUS 165, 166, 265, 266
two credits each **C**
Class Piano I, II, III, IV
Upper levels are continuation courses requiring permission of the instructor

Instruction in piano for the beginning student. No prior musical knowledge is necessary. An electronic piano laboratory will provide the setting for class instruction. Harmonic and melodic improvisation will be pursued as well as the study of keyboard skills and appropriate performance literature.

MUS 169, 170, 269, 270 one credit each **C**
Class Voice I, II, III, IV
Prerequisite: Permission of instructor

To bring to the student by observation, demonstration, participation and listening, a comprehension of the basic principles of vocal production and exposure to the vocal repertoire. Included will be vocalization, breathing language with application to literature. Besides class attendance, students participate in performances.

MUS 245, 246 three credits each **C**
Applied Vocal Repertoire and Ensemble Class I, II

Various interpretive styles of composers in song and music-drama-literature: diction, tempo, phrasing, dynamics, aesthetics, audience rapport. Along with solo repertoire, the vocal small ensemble repertoire, and chamber literature with instrument and voice.

MUS 300 not for credit
Junior Recital
Under the supervision of the appropriate applied faculty students perform a 30 minute recital program. Consult with the department for recital guidelines.

MUS 341, 342 three credits each
Synthesizer Performance I, II
Prerequisites: MUS 223, two semesters of 300-level electronic studio courses and permission of instructor

Advanced individual studies in Music Technology specializing in Synthesizer Performance.

MUS 343, 344 three credits each
Electronic Composition I, II
Prerequisites: MUS 223, two semesters of 300-level electronic studio courses and permission of instructor

Advanced individual studies in Music Technology specializing in Electronic Composition.

MUS 345, 346 three credits each
Sound Production I, II
Prerequisites: MUS 223, two semester of 300-level electronic studio courses and permission of instructor

Advanced individual studies in Music Technology specializing in Sound Production.

MUS 349, 350, 449, 450
three credits each
Applied Vocal Studies V, VI, VII, VIII
Prerequisite: Permission of instructor

Weekly private lessons. Vocal pedagogy will be included at each level.

MUS 351, 352, 451, 452
three credits each
Applied Keyboard Studies V, VI, VII, VIII
Prerequisite: Permission of instructor

Weekly private lessons. Piano pedagogy will be included at each level.

MUS 353, 354, 453, 454
three credits each
Applied Instrumental Studies V, VI, VII, VIII
Prerequisite: Permission of instructor

Weekly private lessons. Instrumental pedagogy will be included at each level.

MUS 355, 356 two credits each
Applied Voice
Prerequisites: Completion of Levels I-IV

Weekly private half-hour lessons for theory track music majors working toward provisional music education certification.

MUS 357, 358 two credits each
Applied Piano I, II
Prerequisites: Completion of Levels I-IV

Weekly private half-hour lessons for theory track music majors working toward provisional music education certification.

MUS 359, 360 two credits each
Applied Instruments I, II
Prerequisites: Completion of Levels I-IV

Weekly private half-hour lessons for theory track music majors working toward provisional music education certification.

MUS 441, 442 three credits each
Synthesizer Performance III, IV
Prerequisite: MUS 342 or permission of instructor

Continuation of MUS 341, 342

MUS 443, 444 three credits each
Electronic Composition III, IV
Prerequisite: MUS 344 or permission of instructor

Continuation of MUS 343, 344

MUS 445, 446 three credits each
Sound Production III, IV
Prerequisites: MUS 346 or permission of instructor

Continuation of MUS 345, 346

MUS 485, 486 one credit each
Senior Recital I, II
Prerequisite: Senior standing in applied studies

Senior recital, under supervision of the appropriate applied faculty member. The first semester and part of the second are to be spent in preparation for the recital. Consult with the department for recital guidelines.

Note: For applied music classes, students pay course-specific fees. Although these may be high in comparison to other university classes, they are indeed modest compared to private lessons.

Performance Ensembles

MUS 155 one credit **C**
UMass Dartmouth Chorus

Open to students, staff, and faculty. Sight-reading not required but minimal experience in group singing desirable.

MUS 157 one credit **C**
Orchestra

Qualified students audition to play with the New Bedford Symphony Orchestra. The course provides opportunity for qualified students to perform standard and contemporary orchestral literature.

MUS 159 one credit **C**
Concert Band

This course provides an opportunity for qualified students to perform major standards and contemporary band literature.

MUS 161 one credit **C**
Small Instrumental Ensembles

Small performing organizations devoted to the music repertoire of all stylistic periods.

MUS 162 one credit **C**
Gospel Choir

Performance of choral repertoire in the gospel tradition. Sight reading not required but minimal experience in group singing desirable.

MUS 163 one credit **C**
Stage Band
Prerequisite: Permission of instructor

Performance of contemporary "Big Band" literature built on the elements of jazz.

MUS 167 one credit **C**
Madrigal Singers
Prerequisite: Permission of instructor

Performance of madrigals and other works for small chorus from a variety of musical styles. Concurrent participation in MUS 155 is encouraged

The performance ensembles are open to all university students, faculty, and staff subject to the approval of the director. They may be utilized as free electives and repeated for credit.

Individualized Study Courses

MUS 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

MUS 495 three credits
Independent Study in Music

Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

MUS 196, 296, 396, 496 three credits
Directed Study in Music
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Theater Arts Courses

Gen Ed Key

C Cultural and Artistic Literacy

Courses in Theater Arts introduce students to the history, theory, and craft of the theater. In conjunction with them, theatrical productions offer laboratory experience. As electives they are open to all the students in the university.

TAR 100 three credits **C**
Theater Workshop I

An introduction to theater practice emphasizing acting and stagecraft. Productions for audiences and an introduction to theater management are also included in this course.

TAR 101 three credits **C**
Theater Workshop II
Prerequisite: TAR 100

Continuation of TAR 100.

TAR 103 three credits **C**
Musical Theatre

A survey of the development of musical theatre, as distinct from opera, in the last 150 years. The course combines biographical material on the composers whose works are studied with information on the development of musical theatre here and abroad and with extensive use of the music and lyrics of the shows themselves.

TAR 200 three credits **C**
Theater Workshop III
Prerequisite: TAR 100

Advanced study and experience in theater and an introduction to directing. Students in this course and in TAR 201 participate in the full theatrical season at UMass Dartmouth as well as in student productions in the community.

TAR 201 three credits **C**
Theater Workshop IV
Prerequisite: TAR 200

Continuation of TAR 200.

TAR 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

TAR 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

TAR 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of instructor and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

This chapter lists minors and other programs that are not contained in one specific college of the university.

Interdisciplinary Programs

Interdisciplinary Minors

Interdisciplinary minors involve a number of academic fields and are offered by faculty from many academic departments. But these programs do more than just convey a subject matter that happens to intersect with more than one academic field. They are interdisciplinary by design and intention, concerned with the methodological issues of interdisciplinary study and valuing the interplay of forms of dialogue used in various fields of inquiry.

Students are encouraged to contact the advisors for these programs to learn more about their range of courses, their benefits, and their challenges.

Pre-Professional Programs

This chapter also describes two pre-professional programs that will be of special interest to our students, **pre-med** and **pre-law**.

All degree programs at the university are pre-professional in that they prepare students to enter their chosen career fields. They allow students to enter the job market, pursue studies toward an advanced degree, or seek professional credentialing, and they are designed to meet professional standards for their fields. In addition, a number of degree programs aim specifically at preparing students for entrance into a profession that requires candidates to obtain a license or certificate after completing their required university studies. Examples include Medical Laboratory Science, Nursing, Engineering, and the program for Teacher Preparation. The descriptions of these and other programs are found in the departmental sections of this *Catalogue*.

African and African-American Studies Minor

African and African-American Studies Committee

Thomas K. Ranuga Sociology

Gloria Waite History

Everett Hoagland English

Seymena McCord Music

Larry Singleton Education

Selected Faculty College of Arts and Sciences, College ofBusiness, College of Engineering, and College of Visual and Performing Arts

Requirements

Each student who minors in African and African-American Studies is required to complete AAS 101 Introduction to African and African-American Studies. In addition, five elective courses must be selected, two from Group A and three from Group B. No more than two of the elective courses may be in one department. Program total: 18 credits.

Group A: Choose two courses

AAS/ECO 103	Cities, Minorities, and Poverty
AAS/ENL 200	Studies in Literature (with appropriate topic)
AAS/ENL 214	African-American Literature
AAS/ENL 215	West Indian and African Literature
AAS/ENL 246	Women Writers
AAS/HST 190	African Civilization
AAS/HST 190	Modern African History
AAS/HST 205	African-American History I
AAS/HST 206	African-American History II
AAS/HST 290	Modern African History
AAS/MUS 125	Jazz: The Listener's Guide
AAS/MUS 242	African-American Music
AAS/SOC 226	Sociology of Africa
AAS/SOC 230	Black Identify and the Social World
AAS/SOC 253	Urban Sociology

Group B: Choose three courses

AAS 298	Experiential Learning
AAS 495	Independent Study
AAS/ARH 361	Art and Culture of Africa
AAS/ECO 343	The Economics of Sex and Race Discrimination
AAS/EDU 451	Contemporary Issues and Challenges
AAS/HST 300	Topics in American History (with appropriate topic)
AAS/HST 378	Slavery in the New World
AAS/PSC 313	Urban Politics
AAS/PSC 372	Revolutionary Change
AAS/SOC 310	Social Movements
AAS/SOC 353	Readings in Sociological Literature: The Black Family
SOC 337	Comparative Ethnic Relations
SOC 353	Readings in Sociological Literature: The Black Family

- To emphasize the African and African-American contribution to world development.
- To broaden and deepen students' understanding of Africa, the African diaspora, and the American identity.
- To provide students of African descent with an opportunity to pursue a program of study directly relevant to their own lives and expose as many students as possible to African and African-American studies.

African and African-American Studies Courses

Gen Ed Key

C Cultural and Artistic Literacy
D Diversity

AAS 101 three credits
Introduction to African and African-American Studies
3 hours lecture

Introduction to the principal topics in the study of Africans and African-Americans. This is the introductory course for the minor in African and African-American Studies, providing students with an encompassing framework for the African and African-American experience.

AAS 125 (MUS 125) three credits **C**
Jazz: The Listener's Guide

Listening techniques designed to broaden the student in basic elements and structural features of jazz music; listening exercises and development of aural skills through the study of appropriate jazz recordings.

AAS 190 (HST 190) three credits **C**
African Civilization

An introduction to the culture, history, and civilizations of the African continent, with special emphasis on sub-Saharan Africa. This one-semester survey is designed to acquaint the student with the principal themes of African history and development from pre-historic to modern times.

AAS 200 (ENL 200) three credits **C**
Studies in Literature

When the subject matter is related to the minor: a study of selected readings dealing with a special topic chosen by the instructor. Recent topics include Black Music in Black Literature, African American Autobiography, and 'WORD!'—African American Poetry.

AAS 205 (HST 205; LST 205) C
three credits **C, D**
African-American History I

A survey of the role of African-Americans in American life and culture from the colonial period to the mid-19th century.

AAS 206 (HST 206; LST 206)
three credits **C, D**
African-American History II

A continuation of the study of the role of African-Americans in American history, from about 1865 to the present.

AAS 214 (ENL 214; WMS 214)
three credits **C**
African-American Literature

Chronological survey beginning with Gustavus Vassa and Robert Hayden's "Middle Passage" and continuing through contemporary writers. Toward the end of the course there will be a focus on new women writers and major writers through the 1990s.

AAS 215 (ENL 215) three credits **C**
West Indian and African Literature

A study of important and innovative West Indian and contemporary African writers.

AAS 226 (SOC 226 or ANT 226)
three credits
Sociology of Africa

A survey of change and conflict in African society, historically and at present. Particular attention will be paid to the effects of colonialism and African resistance to it.

AAS 230 (SOC 230) three credits
Black Identity and the Social World

This course is especially designed for Black students and white students who are concerned with Black heritage. Considerable time will be spent in studying the heritage of black people. We will examine the African past through literature, etc., examine the survival techniques which Blacks developed in order to survive in an alien world, and analyze the collective identity of Black people at the present time.

AAS 242 (MUS 242) three credits **C**
African-American Music
Prerequisite: MUS 107 or equivalent

A general survey of African-American music in the U.S. traced from its origins to the present. The course is intended to introduce the student to the vast and rich expanses of black musical culture, both from a musical and socio-historical standpoint. The emphasis of the course will be on jazz, its history, and an analysis of the contributions of its major innovative figures.

AAS 246 (ENL 246) C
Women Writers
Prerequisite: ENL 102

When the subject matter is related to the minor: an examination of the relationship between the woman writer and her work through a study of literature by and about women. Satisfies literature distribution requirement.

AAS 253 (SOC 253) three credits
Urban Sociology
Prerequisite: SOC 101

An ecological and social psychological analysis of urban life in the United States. Urban institutions and their social relations with the urban community are given special attention.

AAS 290 (HST 290) three credits
Modern Africa

Survey of Africa's modern history, beginning especially after 1800. It looks at the beginnings and expansions of European and African-American settlements there, the Zulu and Islamic Revolutions, the conquest and colonization of Africa, and post-colonial developments.

AAS 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

AAS 300 (HST 300) three credits
Topics in American History

When the subject matter is related to the minor: a critical analysis of selected topics or issues in African-American history.

AAS 337 (SOC 337) three credits
Comparative Ethnic Relations

When the subject is related to the minor: a comparative analysis of interracial and interethnic relations in various areas of the world including the U.S., Latin America, Africa, and Europe. An examination of the causes of inter-ethnic conflict, assimilation, ethnic solidarity, and changes in ethnic identity.

AAS 353 (SOC 353) three credits
Readings in Sociological Literature: The Black Family
Prerequisite: Permission of instructor

When the subject matter is related to the minor: directed readings and analysis in sociological topics related to the Black family.

AAS 361 (ARH 361) three credits **C**
Art and Culture of Africa

A survey of the arts, crafts, and architecture of Africa. Historical developments, stylistics, and aesthetics will be investigated within a socio-cultural framework.

AAS 372 (PSC 372) three credits **C**
Revolutionary Change
Prerequisite: Upper-division standing

Revolution is treated as a special category of social change. The course deals with a comparative analysis of the determinants of revolutionary change in selected areas in Latin America, Africa, the Middle East, and Southeast Asia.

AAS 378 (HST 378) three credits **C**
Slavery in the New World

The trans-Atlantic slave trade and slavery in the Americas from the sixteenth to the nineteenth century. Emphasis on the beginning and development of the trans-Atlantic slave trade; moral issues, economics, and tactics of the trade; and comparisons of the slave societies of Brazil, the Caribbean, and the United States.

AAS 391 (HST 391, WMS 391, LST 391)
three credits **C**
Topics in African History
Prerequisites: HST 190 or HST 290 or written permission of the instructor

Advanced-level course for students with a background in African history. Topics will vary from year to year and may be repeated with chang of content. Research papers will be required.

AAS 451 (EDU 451) three credits
Contemporary Issues and Challenges

When the subject is related to the minor: understanding contemporary problems such as drugs, violence, sexism, and racism, in relation to the school setting.

AAS 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

AAS 196, 296, 396, 496 variable credit
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Gerontology Certificate Program and Gerontology Minor

The University of Massachusetts Dartmouth offers a multidisciplinary gerontology certificate program and a minor. The minor is designed for degree candidates from any college in the university who wish to specialize in the gerontological aspects of their own or other disciplines.

The Certificate Program is a multidisciplinary program that is open to UMass Dartmouth students or members of the community, regardless of whether they are university degree candidates.

Although there is no gerontology major, students may use a concentration in gerontology as a key element in a self-designed multidisciplinary studies major program. See the description of multidisciplinary studies elsewhere in the catalog.

Gerontology may serve as a topical concentration of courses within the Humanities/Social Sciences major described elsewhere in this catalog.

Gerontology Faculty

Shaleen Barnes Librarian

John A. Chooporian Marketing/Business Information Systems

Phyllis Currier Institutional Nursing

Thomas Curry College of Engineering

Ora De Jesus (director, Gerontology Center) Community Nursing

Robert Hackey Political Science

Ann Marie Hedquist Community Nursing

William Holt Psychology

Donald J. Mulcare (program coordinator) Biology

Robert Piper Political Science

Catherine Sheehan Medical Laboratory Science

Dante Vena Art Education

Sonia M. Walgreen Economics

Certificate Program in Gerontology

Requirements

Advisors for Certificate Program in Gerontology

Ora De Jesus Associate Professor of Community Nursing, Ext 8251

Donald J. Mulcare (program coordinator) Professor of Biology, Ext 8224

Sonia M. Walgreen Visiting Lecturer of Economics, Ext 8337

A certificate in gerontology is a credential awarded upon completion of an interdisciplinary program of study on aging in contemporary society. The credential requires twenty-four credits including a practicum. The program emphasizes the development of positive attitudes about aging and the aged, an analysis of the impact of society on aging, and the impact of the older population on society. Students will have direct contact with older adults through the practicum in order to reinforce positive attitudes toward the aging. The core knowledge of all persons receiving the credential requires study in the following areas: demography of aging with regard to present and future trends in the U.S. population, biology of aging, psychosocial issues affecting older adults and caregivers, public policy, ethics, financing of health care for older adults, and health promotion for older adults. The certificate program in gerontology reflects the needs of the older population in the community and the local service network for older adults.

The Certificate is designed for students enrolled at UMass Dartmouth and community members who are interested in completing the certificate requirements.

Admission
Any UMass Dartmouth student or community member wishing to pursue a Certificate in Gerontology should apply to one of the contact persons above.

A Certificate in Gerontology will be awarded upon completion of twenty-four credits (8 courses). These include five required courses, a required practicum and two electives selected from the approved list. A student must achieve a minimum of a grade point average of 2.0 in these courses.

		Required Credits
GRT 201	Introduction to Gerontology	3
GRT/BIO 216 GRT 301 GRT 312 BIO 511	Biology of Aging **OR** Health Disorders of the Elderly **OR** Geronological Nutrition **OR** Seminar: Biological Aspects of Aging	3
GRT 300 GRT 311 GRT /ENL 346 GRT/ECO 366	Aging, Health and Community Support **OR** Topics in Gerontology **OR** Portraits of Older Women **OR** Economics of Aging	3
GRT 309 PSY 490	Mental Health and Aging **OR** Special Topics in Psychology: Psychology of Aging	3
GRT 430	Senior Seminar	3
GRT 421	Practicum	3
	Electives (from approved list)	6
	Program total:	**24**

Approved Electives

GRT 300 Aging, Health, and Community Support
GRT 301 Health Disorders of the Elderly
GRT 302 Aging in Contemporary Society
GRT 309 Mental Health and Aging
GRT 310 Therapeutic Activities in Long-term Care
GRT 311 Topics in Gerontology
GRT 312 Gerontological Nutrition
GRT 435 Art, Artists, Aging and Enjoyment
GRT/ECO 366 Economics of Aging
GRT/EDU 380 Seminar in Lifelong Learning: The Elderly
GRT/ENL 346 Wise Women
GRT/PHL 317 Ethics and Health Care Professionals
GRT/PSC 334 Elder Affairs in American Politics
GRT/PSY 490 Special Topics in Psychology: Psychology of Aging
BIO 511 Seminar: Biological Aspects of Aging
NUR 440/441 Management in Long Term Care

Minor in Gerontology

Advisor for the Minor

Donald J. Mulcare (program coordinator) Professor of Biology, Ext 8224

Gerontology studies aging, a process that may be examined from the per-spective of many academic disciplines—biology, psychology, sociology, political science, economics, and health sciences among them. The gerontology minor is a multidisciplinary program supervised by faculty from many disciplines and colleges within the university.

The gerontology minor is intended to open educational and career opportunities for students who have an interest in aging. Participants will be degree candidates from any college in the university who wish to specialize in the gerontological aspects of their own and other disciplines. The minor is also appropriate for students who want to more fully understand the aging process as it relates to the individual and society. The program is structured for students without previous experience or training in gerontology.

Admission
Any undergraduate degree candidate at UMass Dartmouth who has completed 54 credits toward a baccalaureate degree and has at least a 2.5 GPA in the major and a 2.0 overall GPA may be admitted to the gerontology minor. Application for admission should be made to the program coordinator. Special students who are not UMass Dartmouth degree candidates may enroll in individual courses.

Requirements for the Minor

	Credits
GRT 201 Introduction to Gerontology	3
GRT 430 Senior Gerontology Seminar	3
Electives (from the courses listed)	12
Program total:	**18**

At least 9 of the 18 credits must be at the upper-division level.

Courses for the Gerontology Certificate Program and the Minor

Gen Ed Key

C Cultural and Artistic Literacy
D Diversity
S Natural Science and Technology

GRT 201 three credits**D**
Introduction to Gerontology

An overview of gerontology is presented with emphasis on the integration of the physical, biological, psychological, social, economic and political aspects of aging. Field experience will include a series of interviews with an older person to develop an oral history.

GRT 216 (BIO 216) three credits **S**
Biology of Aging
Prerequisite: BIO 101, an equivalent, or permission of instructor

The biological background to the aging process will be presented. This will include a description of the theories of aging and the developmental and physiological changes that occur throughout the aging process.

GRT 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

GRT 300 three credits **D**
Aging, Health and Community Support
Prerequisite: GRT 201 or permission of instructor

The course focuses on the older adult who resides in the community. Aging is presented as a normal development stage in the life cycle. Factors that facilitate the achievement of old age as an enjoyable and satisfying time of life will be stressed. Forces that impact negatively on the quality of life of older adults will be analyzed. Relevant gerontological research will be highlighted. Support services and available resources for the older adult will be explored and provide an opportunity for student involvement with the elderly.

GRT 301 three credits
Health Disorders of the Elderly
Prerequisites: BIO 101, 102; or BIO 221, 222; or permission of instructor

The course focuses on an investigation of physiological and pathological changes which may accompany the aging process in some individuals.

GRT 302 three credits
Aging in Contemporary Society

This course introduces students to the study of aging through a focus on the social definitions, structures, relations, and problems. The differential role of gender, class, ethnicity, race and geography will be explored in relation to aging in society. Emphasis will be placed on the relationship between aging and key social institutions such as the family, community, education, religion, government, industry and health care. Students will have opportunities to explore topics through field work and/or written assignments.

GRT 309 three credits
Mental Health and Aging

This course will provide the student with an understanding of the issues in mental health and mental illness of the aged individual. The course presents an in depth discussion of the etiology, symptoms, and treatments of those mental disorders most frequently encountered in the elderly.

GRT 310 three credits
Therapeutic Activities in Long-term Care
Prerequisite: GRT 201 or permission of instructor

Therapeutic recreation for the aging. Topics include: Omnibus Budget Reconciliation Act and Massachusetts Department of Public Health regulations, calendar planning, program development, resources and activity sharing, management, volunteerism, professionalism, and many aspects of therapeutic recreation with the aging population. Course is applicable towards Massachusetts Certification in Activities for Health Care Professionals and Day Care Recreational Professionals.

GRT 311 three credits
Topics in Gerontology
Prerequisite: GRT 201

Topics in gerontology not usually included in the gerontology curriculum will be offered

Note: For distribution requirements, and general education requirement, cross-listed courses follow the status they have in their offering department.

in this course. Content will vary with each offering; course may be repeated with change of content. Material may be presented in a lecture or a seminar format.

GRT 312 three credits
Gerontological Nutrition
Prerequisite: NUR 105 or equivalent

Nutritional needs of the older adult. This course focuses on the physiological changes that occur with the aging process and their relationship to the nutritional requirements of the elderly. Assessment of the nutritional status of elders and nutritional services available to this group will also be discussed.

GRT 317 (PHL 317) three credits
Ethics and Health Care Professionals
Prerequisite: Junior standing in Medical Laboratory Science, Nursing, Psychology or Sociology

An examination of the ethical aspects of the health care professions and the impact of ethical issues on the professional's life. Topics include responsibility, conscience, professional codes of ethics, privacy, informed consent, access to health care, loss and death.

GRT 334 (PSC 334) three credits
Elder Affairs in American Politics
Prerequisites: PSC 101; GRT 201 (recommended)

The elderly are described and analyzed within the context of general political science concepts of participation and representation in the American political system; in particular, interest group theory is reviewed and critiqued as applied to elders and their organizational advocates.

GRT 346 (ENL 346) three credits **C**
Portraits of Older Women
Prerequisite: ENL 102

This team-taught course presents a multidisciplinary perspective of the phenomena of women and aging in American society. The experiences of older women are explored through literature, oral histories, and intergenerational class projects to determine the forces that affect quality of life and productivity in later life.

GRT 366 (ECO 366) three credits
Economics of Aging
Prerequisites: ECO 231, 232; or permission of instructor

Economic issues associated with "growing older" as well as issues and policies related to "being older"; including the economic status of the elderly, economic implications of paid work or retirement, the economics impact of social security, health care needs and costs.

GRT 380 (EDU 380) three credits
Seminar in Lifelong Learning: The Elderly
Prerequisite: GRT 201

This is an advanced course for professionals delivering services to the elderly. Students will be involved in discussions, readings and experiences intended to lead to deep insight and understanding of the elderly. Each student is expected to choose an elderly partner in the community and to spend at least two hours a week with that partner.

GRT 421 three credits
Practicum
Prerequisites: GRT 201 and minimum of one other gerontology core course completed.

The practicum, a required course for the certificate, provides the student an opportunity to synthesize and apply knowledge about older adults either through supervised field experience or a project in gerontology. The practicum is planned to meet the individual needs of the student relative to professional background, personal interests, and career goals

GRT 430 three credits
Senior Seminar
Prerequisites: GRT 201 and the completion of at least six (6) other credits in the minor.

A culminating and integrating seminar with research components open to those accepted as candidates for the minor who have senior standing or to others with permission of the instructor.

GRT 435 (AED 435) three credits **C**
Art, Artists, Aging, and Enjoyment

Art history as it relates to the careers of older artists; the representation of age in art; the design of art programs of use to elders and a review and practice of appropriate media will be presented in a combined lecture and studio format. May satisfy Humanities distribution requirement.

NUR 440-441 three credits
Management in Long Term Care
Prerequisite: Nursing degree
Elective for Gerontology certificate

In this theory/clinical lab course the management role of the professional nurse in the nursing care of the older person will be examined. Clinical practice occurs in a skilled nursing home with opportunity for interaction and referral to, from and within the long term care system. Analysis of the long term care system regulatory processes as they affect client outcomes will also provide a basis for evaluation and for the development of creative nursing strategies. Emphasis will be placed on the application of current nursing knowledge and research in the practice setting.

GRT 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

GRT 196, 296, 396, 496 variable credit
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Honors Program

Director of Program

Louise Habicht English

University-wide honors activities are available to students who demonstrate high academic achievement. Students with an excellent academic record receive an invitation to participate in the Honors Colloquium, the Series, Honors Essay Contest, the Annual Honors Convocation and other events that recognize and encourage the achievement of honors students. Participants may engage in as few or as many activities as they desire.

Students with a cumulative grade point average at or above 3.2 may enroll in available introductory level honors sections of courses such as history, economics, political science, sociology, psychology, English, chemistry, philosophy, biology, engineering, mathematics, gerontology, art history, philosophy, and physics. Students admitted to the university with test scores and/or high school records which predict university performance at honors levels receive invitations to enroll in honors sections. Nominations from secondary school teachers or counselors, and from faculty of the university may also result in invitations.

Honors Residence Area
The Honors Residence Area in Green Residence House 6 offers housing to honors students who select this Lifestyles option. Students live in suites with other students who share an interest in the challenges offered by an honors program. The Honors Program also schedules special events programs in the residence area. The Resident Assistant assigned to the area is enrolled in the program. The Honors Program operates a satellite office in the Green Mail Room, House 6 Lobby. The Director, committee members, and honors faculty offer on-site academic advising in this location. The office also offers a computer work-station available to students in the program.

Students who complete the 30-credit honors program graduate as **Commonwealth Scholars**.

These students must
- complete at least 15 credits of honors courses outside the field of their major;
- complete HON 201 Multidisciplinary Approaches to Research and Writing;
- complete 6 credits of junior-level honors coursework in the major; and
- complete 6 credits of a senior honors project, independent study, or thesis in the major field during the senior year.

By agreement with the director and the major department chairperson, a student may fulfill all or part of the advanced honors requirement in the major field through study abroad, special summer projects or research, or participation in honors semesters at other schools in the United States or abroad.

For further information about the University Honors or departmental honors programs, consult the Academic Regulations and Procedures chapter of this *Catalogue* and the various departmental sections.

Honors Courses in the Disciplines

HON 201 three credits
Multidisciplinary Approaches to Research and Writing
Prerequisites: Successful completion of three honors courses; sophomore or junior standing; 3.2 or higher cumulative GPA

Introduction to the models of scholarly reasoning and problem-solving used in various academic disciplines. This course enables honors students to develop their critical thinking abilities across several fields of inquiry, including the sciences.

ENL 279 three credits
Tutoring Writing: Theory and Methods — Honors
Prerequisites: Honors Program or 3.20 GPA; by nomination and invitation only

The training course designed for the Honors Writing Fellows Program. The course provides students opportunities to learn about on-going theoretical conversations regarding composition instruction, collaborative tutoring, and writing pedagogy. Students learn to use their theoretical knowledge to determine strategies for assisting peers with their written work. Once class hour per week is devoted to application in the Writing Center or in fellowing papers from a class, taping, and analyzing tutorial sessions, and interviewing faculty members about writing in the disciplines.

HON 395 three credits
Honors As Writing Fellow
Prerequisites: ENL 279 and recommendation of ENL 279 instructor

An advanced tutoring program for specially selected and trained honors students administered through the Writing/Reading Center and the University Honors Program. Writing fellows are assigned to work with students in a variety of disciplines as requested by instructors. Fellows work with about fifteen students in a class, providing written responses to first draft papers and holding individual conferences with students. Students may earn up to 6 credits by taking this course twice, fellowing for two different courses.

HON 396 three credits
Honors As Writing Fellow: Research
Prerequisites: ENL 395 and recommendation of ENL 395 instructor

A continuation of the writing fellows program for specially selected and trained honors students, administered through the Writing/Reading Center and the University Honors Program. Writing fellows taking this section are expected to fellow a different course than in HON 395. In addition, fellows serve as active mentors to students in ENL 279 and take on a serious research project in the area of tutoring, collaborative learning, writing across the curricula, or other writing program or instruction research.

Honors courses in the university's subject disciplines are scheduled each semester with special criteria for size and use of a seminar format. Consult the *Course Listings* publication each semester.

International Marketing/ French Certificate Program

The Omer E. and Laurette M. Boivin Center for French Language and Culture offers a Certificate Program in International Marketing/French. Any UMass Dartmouth student wishing to pursue the Certificate may apply to The Boivin Center through its Director for entrance into the program.

Program Director

Deborah Lee Foreign Languages

Certificate Requirements

Students must have completed French courses through French 202, or have the equivalent knowledge of French. The Certificate of Studies in International Marketing/French will be awarded with the diploma at graduation, providing that the student has at least a 2.5 grade point average in Certificate courses.

		Credits
Courses in French		
FRN 301	French Composition and Conversation I	9
FRN 302	French Composition and Conversation II	
FRN 337	Commercial French	
Courses in Economics and Business		
ECO 231	Economics	12
ECO 232	Economics II	
MKT 311	Principles of Marketing	
ECO 433	International Finance **OR**	
ECO 431	International Trade	
One of the following courses (Course substitutions may be made with permission of the director)		
FIN 312	Business Finance	3
HST 329	European Economic History	
FIN 381	Money, Banking, and Economic Activity	
PSC 383	The Politics of International Economic Relations	
FIN 397	Financial Forecasting Methods	
FIN 398	Financial Institutions	
MKT 420	International Marketing	
ECO 431	International Trade	
FIN 494	International Financial Management	
	Total:	**24**

For full course descriptions please consult the appropriate department listings.

Judaic Studies Minor

The Judaic studies minor presents an interdisciplinary focus for studies of Jews and Judaism, including but not limited to historical, literary, linguistic, and philosophical perspectives and approaches.

The primary educational goal of this minor is to provide students with a clear idea of how different approaches to the framing and answering of questions of systematic learning deal with the same social entity over a long period of history. From this minor, the student should learn at least three things:

- some of the facts of the subject; that is, some knowledge of the history, philosophy, literature, and languages of the Jews;
- some clear knowledge of how a historian, philosopher, literary critic, or scholar of language frames humanistic questions and proceeds to answer them; and
- some ideas of what it means to look at the same subject from different perspectives.

Each student in the Judaic Studies minor is required to work closely with a faculty member in choosing courses offered through the minor. Although each student will have the flexibility to choose any course in the program, the advisers will guide the students so the program does not become a non-disciplinary exercise in Jewish studies, but a crafted effort to show how diverse disciplines within the academic community deal with a single subject. Those students completing the minor will receive recognition on their transcripts.

Judaic Studies Committee

Janet Freedman Education

Barbara Jacobskind English

Peter London Art Education

Robert Michael History

Robert P. Waxler (chairperson) English

Requirements

The Judaic Studies minor is open to any interested student with a cumulative GPA of at least 2.0 and with a 2.5 or higher GPA in the major.

Each student takes at least six courses within the minor, selected so that at least one course is in the area of history, one is in literature, and one is in philosophy or language; and at least three are upper-division.

		Credits
JST 495	Independent Study: interdisciplinary seminar or other integrating topic	3
Five courses from the list of Judaic Studies courses		15
	Total:	**18**

Judaic Studies Courses

Gen Ed Key

C Cultural and Artistic Literacy
G Global Awareness

Note: For distribution requirements, and general education requirement, cross-listed courses follow the status they have in their offering department.

JST 213 (HST 213) three credits **C**
World of the Old Testament

An historical, sociological, and philosophical study of the world of the Old Testament and its effect upon the development of both Christianity and Islam. Special emphasis is placed upon recent archaeological discoveries which shed light upon the interaction of ancient Israel with surrounding cultures and its place in the context of Middle Eastern civilization. Lecture and discussion are supplemented with slide presentations and the display of various artifacts that reflect the lifestyles of the Biblical period.

JST 214 (HST 214) three credits **C**
The Post-Biblical World

An historical, sociological, and philosophical study of the post-Biblical world. Particular emphasis is placed upon both the origins of Christianity within the context of Jewish, Middle Eastern, and Roman history and the parallel development of Rabbinic Judaism. In addition to lecture and discussions, the class participates in a Seder Meal where the ritual practices of first-century Israel are recreated.

JST 218 (ENL 218) three credits **C**
Modern Jewish Literature

Major written works reflecting Jewish themes. Particular emphasis is placed on changes in Jewish culture and Jewish consciousness suggested by these works and how these changes mirror universal changes in the modern West.

JST 260 (HST 260) three credits **C**
The History of the Jewish People

A survey of the social, political, and economic history of the Jewish people from the first century through the modern era. Special emphasis is placed upon Jewish-Christian and Jewish-Islamic relations and their effect upon anti-semitism, the Holocaust, and the growth and development of Zionism. The student becomes acquainted with the place of the Jewish people in the mainstream of western culture and with the problem of maintaining ethnic and religious identify in a basically hostile environment.

JST 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

JST 300 three credits
Topics in Tewish Studies

Topic of concern in Jewish Studies, as announced . May be repeated with change of topic.

JST 356 (HST 356) three credits **C, G**
The Holocaust

An examination of the Holocaust, including the psychosocial aspects of prejudice; the history of anti-semitism from Biblical times; the historical, political, racist, economic, social, psychological, literary, legal, theological, and moral aspects of the Holocaust.

JST 400 (HST 400) three credits **C**
Seminar in European History: A History of Christian-Jewish Relations

An examination of the fundamental structures of Judaism and Christianity and the historical origins of the myths created by the conflict between Judaism and Christianity. The course traces the various ways these myths have worked through European history and suggests some possible solutions to the conflicts.

JST 495 three credits
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings, interdisciplinary seminar or other integrating topic. Conditions and hours to be arranged.

JST 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

Labor Studies Minor and Certificate Program

A labor studies background can help students prepare for future studies in labor law and labor relations, offer an opportunity to work for labor organizations and advocacy groups, and provide experience in public policy matters including employment issues such as health care, privatization, and new technology in the workplace.

The University of Massachusetts Dartmouth offers both a minor and a certificate program.

The labor studies minor offers university degree-seeking students an interdisciplinary approach to the analysis of work, workers, and the institutions they create to advance their interests as citizens of the workplace, the community, and the nation. Its primary goal is to focus the various humanistic perspectives derived from the liberal arts on the problems and conditions of labor in society. Consequently, it involves the study of labor history, political science, sociology, anthropology, economics, psychology, philosophy, and literature. It seeks to convey to students an understanding of labor as a broad social force with a constructive role to play in the solution of national and community problems.

The certificate in labor studies was created primarily to serve the needs of working adults, with a high school diploma or its equivalency, who are interested in learning more about labor issues. The aim is to help people prepare for a career in labor relations, advance in their unions, learn how to handle new issues in their workplace, or simply better understand the rich experience of workers and unions.

Labor Studies Committee

Roberta Hazen Aaronson Sociology/ Anthropology

Clyde Barrow Political Science

David Berger (progam coordinator) Economics

Daniel Georgianna Economics

Betty Mitchell History

James Nee English

José A. Soler Labor Education Center

Jack Stauder Sociology/Anthropology

Gloria Waite History

Robert Waxler English

Advisor for the Minor and Certificate Program

David Berger Professor of Economics

Minor Program in Labor Studies

Requirements

Students with a cumulative GPA of 2.0 or above and a 2.5 or higher GPA in their majors are invited to enter the labor studies minor. A course of study, should be constructed around an integrating theme such as labor and socio-economic theory; race, class, and gender; or labor and American thought.

The minor requires the completion of six courses (18 credits), of which three must be at the upper-division level. There are three required courses, and you may choose three electives from the list of designated Labor Studies courses:

		Credits
LST/HST 209	History of Labor in the United States	3
LST/PSC 326	Labor Relations: Law, Practice, and Policy	3
LST 450	Seminar in Labor Studies	3

Three electives from the following list. One of the elective courses must be at the upper-division level. There are three required courses, and you may choose three electives from the list of designated Labor Studies courses: 9

LST 101 Introduction to Labor Studies
LST/ECO 103 Cities, Minorities, and Poverty
LST/ECO 111 Jobs, Employment, and Income
LST/HST 205 African-American History I
LST 207/SOC 205 Industrial Society and Human Problems
LST/HST 206 African-American History II
LST/ENL 211 The American Dream
LST/ENL 218 Literature and Society
LST/PHL 226 Marx
LST/SOC 240 Dynamics of Community Organization
LST/ANT/SOC 249 The World of Work
LST/ENL 249 The World of Work
LST 250 Problems in Labor Studies
LST/SOC 301 Sociology of Work
LST/SOC 305 Political Sociology
LST/HST 310 American's Working Women
LST/MGT 331 Industrial Relations and Labor Management
LST/ECO 342 Labor Economics
LST/ECO 343 Economics of Sex and Race Relations
LST 350 Issues in Labor Studies
LST/PSC 354 Contemporary Political Thought
LST/SOC 356 Wealth, Status, and Power in America
LST/HST 378 Slavery in the New World
LST/SOC 402 Sociological Theory
LST/MGT 435 Conflict Management
LST 443/MGT 443 Human Resources Development
LST 451/MGT 452 Human Resources Law
LST/ECO 452 Manpower and Regional Development
LST/ECO 453 Work, Jobs, and Income
LST/MGT 462 Managing Diversity
LST 497 Internship in Labor Studies

Additional Political Science courses may be available for credit in the Labor Studies minor. Please check the Fall and Spring Course Listings published by the Office of University Records.

Total: 18

Certificate Program in Labor Studies

Requirements

The certificate program is open to any UMass Dartmouth student or community member. Applicants wishing to pursue a Certificate in Labor Studies should speak with David Berger, (508) 999-8256, or with the Labor Education Center staff, Group I Building, Room 106, (508) 999-8007. The certificate does not lead to a formal university degree, but students choosing to pursue a degree may apply credits earned in the certificate program.

The certificate program requires the completion of eight courses (24 credits). There are six required courses, and you may choose two electives from the list of designated Labor Studies courses:

		Credits
LST 101	Introduction to Labor Studies	3
LST/HST 209	History of Labor in the United States	3
LST 250	Problems in Labor Studies	3
LST 350	Issues in Labor Studies	3
LST/MGT 435	Conflict Resolution	3
LST 451/MGT 452	Human Resources Law	3

Two electives from the following list. One of the elective courses must be at the upper-division level. There are three required courses, and you may choose three electives from the list of designated Labor Studies courses: 6

LST/ECO 103 Cities, Minorities, and Poverty
LST/ECO 111 Jobs, Employment, and Income
LST/HST 205 African-American History I
LST 207/SOC 205 Industrial Society and Human Problems
LST/HST 206 African-American History II
LST/ENL 211 The American Dream
LST/ENL 218 Literature and Society
LST/PHL 226 Marx
LST/SOC 240 Dynamics of Community Organization
LST/ANT/SOC 249 The World of Work
LST/ENL 249 The World of Work
LST/SOC 301 Sociology of Work
LST/SOC 305 Political Sociology
LST/HST 310 American's Working Women
LST/MGT 331 Industrial Relations and Labor Management
LST/ECO 342 Labor Economics
LST/ECO 343 Economics of Sex and Race Relations
LST/PSC 354 Contemporary Political Thought
LST/SOC 356 Wealth, Status, and Power in America
LST/HST 378 Slavery in the New World
LST/SOC 402 Sociological Theory
LST 443/MGT 443 Human Resources Development
LST/ECO 452 Manpower and Regional Development
LST/ECO 453 Work, Jobs, and Income
LST/MGT 462 Managing Diversity
LST 497 Internship in Labor Studies

Total: 24

Labor Studies Courses

Note: For distribution requirements and general education requirements, cross-listed courses follow the status they have in their offering department.

LST 101 three credits
Introduction to Labor Studies

An interdisciplinary introduction to the analysis of work and workers. The course surveys the traditional history of American labor, the legal framework of current labor-management relations, the structure and function of trade unions, models of collective bargaining, and contemporary labor issues.

LST 103 (ECO 103) three credits **D, E**
Cities, Minorities, and Poverty

Review and analysis of major social problems faced by cities. Emphasis is placed on origin, causes, and possible solutions for poverty and minority problems.

LST 111 (ECO 111) three credits **D, E**
Jobs and Discrimination

Basic analysis of problems of economic growth, job creation, and unemployment; structure of work and jobs will be explored, along with current issues surrounding the government's impact on inflation, taxation, and economic planning.

LST 205 (HST 205; AAS 205)
three credits **C, D**
African-American History I

A survey of the role of African-Americans in American life and culture from the colonial period to the 1890s.

LST 206 (HST 206; AAS 206)
three credits **C, D**
African-American History II

A continuation of the study of the role of African-Americans in American history, from the 1890s to the present.

LST 207 (SOC 205) three credits
Industrial Society and Human Problems

An overview of modern society, particularly our own, with an emphasis on the problems and possibilities we face today.

LST 209 (HST 209) three credits **C, D**
History of Labor in the United States

History of the American working class throughout the 19th and 20th centuries. The course will examine the experiences of both organized labor and the masses of unorganized workers, and highlight issues of race, class, gender, and ethnicity.

Gen Ed Key

C Cultural and Artistic Literacy
E Ethics and Social Responsibility
G Global Awareness
D Diversity

LST 211 (ENL 211) three credits **C**
The American Dream

A study of the meaning of success as reflected in works ranging from those of Benjamin Franklin and Horatio Alger to the plays of Arthur Miller.

LST 218 (ENL 218) three credits **C**
Literature and Society

A study of the relationship between the individual and society through readings in modern literature.

LST 226 (PHL 226) three credits **C**
Marx

An introduction to the work of Karl Marx for those students who do not necessarily have philosophical backgrounds. Student will explore the philosophical and scientific phases of Mark's thought by examining his writings.

LST 240 (SOC 240) three credits
Dynamics of Community Organization

Analysis of the theory and practice of community organizing with particular emphasis on the development of social action and community development techniques on the grass-roots level. This course will be conducted as a seminar with student participation expected in class discussions. In addition, mini-lectures, field simulations, roleplaying, guest speakers, and field observations will be utilized.

LST 249 (ANT/SOC 249, ENL 249)
three credits
The World of Work
Prerequisites: One introductory social science or English course and ENL 101, 102

An examination of the personal and social importance of work in human society through literary, sociological, and anthropological texts. These issues will be explored: The meaning, value, and organization of work in non-industrial and industrial societies; the effects of value systems on the work process; the problems surrounding work in contemporary America (gender, age, race, class, worker/management relations), and the future of work.

LST 250 three credits
Problems in Labor Studies
Prerequisite: LST 101 or permission of instructor

Topics to be studied will be drawn from the following areas: Minorities in the Labor Movement: the role of women, Latinos, African-Americans, and Asian Americans in the development of the U.S. labor movement, exploration of the changing workforce in the U.S. and how the labor movement has dealt with this new reality; Contract administration and the law; union administration, etc.

LST 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

LST 301 (SOC 301) three credits
Sociology of Work

The analysis of work in modern society, and how, historically, labor/management relations have shaped out lives.

LST 305 (SOC 305) three credits
Political Sociology
Prerequisites: SOC 201, SOC/ANT 113, PSC 101, 102; or permission of instructor

An exploration of sociological perspectives on the study of power relationships, political communities, political processes, and institutions.

LST 310 (HST 310) three credits **C, D**
American's Working Women

The experience of American working women—Black and white, native and immigrant, organized and unorganized—from the colonial period to the present day. Because work is defined as productive labor, this course will examine women as paid and unpaid workers—in the marketplace as well as in the home. Some of the areas of study will be women on the frontier, women in the mills and factories, labor union women, women in the professions, and the history and politics of housework.

LST 326 (PSC 326) three credits
Labor Relations: Law, Practice, Policy

An examination of the political and legal framework of U.S. labor relations. The course will include analysis of legislation and Supreme Court and NLRB cases which shape national labor policy and define relations among workers, employers, and the state.

LST 331 (MGT 331) three credits
Industrial Relations and Labor Management
Prerequisites: MGT 311, 336

Background and present status of labor organizations. Emphasis is on current labor-management issues and aims to help students understand specific practices, such as collective bargaining. Formerly HRM 331.

LST 342 (ECO 342) three credits
Labor Economics
Prerequisites: ECO 231, 232

The labor force. The following topics are examined: wages in competitive and non-competitive markets; wage structures; inequalities and discrimination; impact of unions and social standards; indexation, inflation, and unemployment.

LST 343 (ECO 343) three credits **E**
Economics of Sex and Race Relations
Prerequisites: ECO 231, 232; or permission of instructor

The theory of labor markets and the problem of discrimination. Current problems facing women and minorities will be examined. Existing program and trends will be explored.

LST 350 three credits
Issues in Labor Studies
Prerequisite: LST 250 or permission of instructor

Examination of contemporary issues facing labor. Topics will depend on student interests and needs. Examples of possible topics include: Technology and Labor; Jobs and the Global Economy; Occupational Safety and the Law; Labor-Management Cooperation; Productivity and Wages.

LST 354 (PSC 354) three credits
Contemporary Political Thought
Prerequisite: Upper-division standing

Survey of the recent ideological currents in advanced capitalist societies: neo-conservatism, neo-liberalism, syndicalism, postmarxian socialism, eco-anarchism, and corporate fascism. The course will focus on political thinkers who have made significant contributions to the interpretation of

Note: For distribution requirements, and general education requirement, cross-listed courses follow the status they have in their offering department.

contemporary political and economic developments.

LST 356 (SOC 356) three credits
Wealth, Status, and Power in America

The study of the various ways in which different societies assign their members to higher and lower positions of prestige, power, and possessions. A sociological analysis of the ways in which a person's stratified rank influences personality and life opportunities in society.

LST 357 (PSC 357) three credits
Marxian Political Theory
Prerequisites: PSC 201 or 204, ECO 232, SOC 200; or permission of the instructor

The basic concepts of 'Radical political economy'. Course will include an in-depth analysis of Marx's *Capital*, Vol. I, as well as a survey of current trends in the development of a critical theory of the state.

LST 378 (HST 378) three credits **C**
Slavery in the New World

The trans-Atlantic slave trade and slavery in the Americas from the sixteenth to the nineteenth century. Emphasis is placed on the beginning and development of the trans-Atlantic slave trade; moral issues, economics, and tactics of the trade; and comparisons of the slave societies of Brazil, the Caribbean, and the United States.

LST 391 (HST 391, WMS 391, AAS 391) three credits **C**
Topics in African History
Prerequisites: HST 190 or HST 290 or written permission of the instructor

Advanced-level course for students with a background in African history. Topics will vary from year to year. Research papers will be required.

LST 402 (SOC 402) three credits
Sociological Theory
Prerequisites: SOC 101 or SOC 113 or ANT 113; and one advanced sociology course

The synthesizing and integrative functions of theory in the sociological enterprise. The course seeks to awaken an awareness of the nature and role of concepts in theory construction, and to highlight the gains and losses which accrue in all linguistic statements about the world. The work of Marx, Durkheim, Weber, Veblen, Sorokin, G.H. Mead, and R.K. Merton are given special attention, both as pioneering examples of theoretical innovation and as substantive points of departure for future inquiry.

LST 435 (MGT 435) three credits
Conflict Management
Prerequisites: MGT 311 and at least junior standing

Formal and informal methods of conflict resolution among people in organizations. Theories and methods of conflict resolution will be studied and practiced for their efficacy. This course provides students with the opportunity to develop the skills required to become effective conflict managers in organizational contexts. This course serves as an elective in the College of Business and Industry.

LST 443 (MGT 443) three credits
Human Resources Development
Prerequisites: MGT 311, 336, 365

The study of sets of systematic, planned activities which organizations develop for the purpose of providing people with skills/knowledge appropriate for the current health and future positive growth of the people and organization. Students will learn basic Human Resources Management skills, the roles of HRD professionals, organizational and individual needs assessment tools/skills; training and development program development tools; and HRD program evaluation skills/techniques.

LST 450 three credits
Seminar in Labor Studies

A seminar in contemporary labor issues, offered either as LST 450 or as a cross-listed course from an appropriate discipline with an appropriate topic. This seminar is to be taken at the end of the student's work in the minor. Each student will be required to produce a research project.

LST 451 (MGT 452) three credits
Human Resources Law
Prerequisites: MGT 312, 365; and at least junior standing

The laws, executive orders, and political and social factors external to firms with affect their human resources management practices. Topics include ethics and social responsibility, regulatory issues, EEOC, affirmative action, performance appraisal, and discrimination in the workplace. (Formerly HRM 452.)

LST 452 (ECO 452) three credits **D**
Manpower and Regional Development
Prerequisites: ECO 231, 232, or permission of instructor

Review of labor market problems and programs in growing and depressed regions, with special emphasis on New England. Attention focused on the impact of education, training and government manpower programs.

LST 453 (ECO 453) three credits
Work, Jobs, and Income
Prerequisites: ECO 231, 232, or permission of instructor

Study of changes in the labor force, the impact of labor market processes and how they affect work motivation, job performance and income distribution.

LST 462 (MGT 462) three credits **D**
Managing Diversity
Prerequisites: MGT 311, 336, 365; and at least junior standing

A skills-building course aimed at increasing awareness of the issues related to managing multicultural workplaces. Focus will be placed on the challenges and opportunities afforded leaders/managers in dynamic U.S.-based workplaces. Personal exploration of prejudices, myths/facts, and perceptions which shape effective leadership will be central to this course.

LST 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

LST 196, 296, 396, 496 three credits
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

LST 497 three credits
Labor Studies Internship
Prerequisites: 6 credits in labor studies, upper-division standing, and permission of chair of the Labor Studies Committee.

Post-Baccalaureate Certificate Program

Individualized study for those who already hold a bachelor's degree.

UMass Dartmouth offers those who already hold a bachelor's degree the opportunity to meet new career or work demands or satisfy personal goals through an individualized Post-Baccalaureate Program (PBP). In Special Student status, these students pursue non-degree study leading to a certificate without receiving formal admission to a master's degree program. The PBP candidate receives the advantages of program planning with an advisor, a departmental commitment, and favorable timing for class registration. Depending on one's qualifications, courses in an individual's PBP may be at the graduate or undergraduate levels or combine the two.

After forming general plans about the program of studies desired, the student applies to the academic department in which the principal studies are to be pursued, where her/his needs are discussed and qualifications reviewed and a program of specific courses is selected. A PBP may be pursued in any academic department of the university that chooses to participate, and interdepartmental programs may also be proposed. Some departments will prepare "packages" of courses designed to meet known needs; others will rely on separate course selections to meet each candidate's needs individually. In the process of formulating a student's PBP, the advisor must consider the availability of course offerings, in terms of both anticipated scheduling and the likelihood of space being available; when more than one department is involved, the chairperson of the other department will be consulted.

The number of courses in a PBP is generally more than three but fewer than in a regular undergraduate minor. Students working toward PBP certification must maintain a minimum GPA of 2.0 in the listed courses, and the department is free to establish a higher minimum level of performance. The listing of courses for the PBP will be maintained in the student's registrar's office file. The department will indicate official completion of the PBP, which will be recorded on the transcript, and then issue a letter of verification.

The PBP is not a means of pursuing a formal graduate degree, a second undergraduate major or an undergraduate minor, which are available through the regular admission/re-admission programs of the university. Because the program does not lead to a degree, the PBP will not be available to those needing a temporary student visa.

Those interested may request a PBP packet at the offices of Undergraduate or Graduate Admissions, the Registrar, or an academic department. The packet describes the program and enrollment processes, indicates the documentation required from the applicant, and includes all necessary forms. Officers in Undergraduate and Graduate Admissions can provide advice and assistance to those making initial inquiries.

Prospective PBP students will bring the completed form to the department involved, along with their college/university transcripts showing courses and grades and completion of a baccalaureate degree (departments might require other forms of documentation, at their discretion). If agreement is reached to establish a PBP for an applicant, its specific courses and requirements will be recorded on a second form and the department chairperson's approval will be obtained (and Dean's if so stipulated for that College). The PBP thus serves like a contract between the student and department, establishing courses to be completed and other terms for the completion of the program and awarding of the post-baccalaureate certificate.

If a PBP is not agreed upon, the prospective student can return to the undergraduate Admissions Office for additional guidance.

PBP students may register during the previous semester, along with current juniors. As a condition, PBP students must receive timely departmental approval prior to each registration, to insure that advising and progress-monitoring occur. Without this approval, they must register along with other Special Students just before the beginning of the semester and will receive no priority of access to registration.

Pre-Law

Pre-Law does not in itself constitute a major. Nevertheless, students who intend to enter law schools should undertake careful planning of appropriate topics of study around the field of their chosen major. Special attention should be given to building a foundation of skills in written and oral communication, research, calculation, and critical thinking.

The Pre-Law adviser assists all students who identify themselves as pre-law in their pursuit of admission to a professional school. Among the forms of assistance offered are the following:

- Reviewing each student's program and progress.
- Providing advice on course selections and design of a coherent pre-law program of study.
- Providing up-to-date information about law school admission requirements.
- Providing information about the Law School Admissions Test (LSAT) and advice about preparation for it.
- Assisting the candidate in assembling letters of recommendation.

Pre-Law Advisors

Kevin Hargreaves History

Jeffrey Dense Political Science

Pre-Medical

The university offers sound and appropriate preparation for study at professional schools which train physicians, veterinarians, dentists, osteopaths, podiatrists, chiropractors, and physician's associates. Students may also complete approximately two years of a pre-pharmacy program at UMass Dartmouth before transferring to an institution with a college of pharmacy.

Students interested in pursuing any of these careers should consult with one of the Pre-Medical advisers as early as possible. An eight-member Faculty Premedical Advisory Committee counsels and assists pre-med students.

Students who wish to prepare for admission into graduate schools of medicine have many options open to them. By the judicious use of electives, any student can satisfy the undergraduate preparatory course requirements of most medical schools. Preparation for medical careers requires the completion of core courses in biology, chemistry, mathematics, physics, and frequently psychology. While pre-medical students at UMass Dartmouth most commonly major in biology or chemistry, the core courses required for preparation to enter medical school can be completed in combination with any major in the University. Students contemplating medical careers are encouraged to major in whatever discipline they find interesting and satisfying, but they should do this in consultation with the pre-medical faculty advisers.

Pre-Medical Advisors

Alan H. Bates Chemistry

Donald J. Mulcare Biology

Pre-Medical Advisory Committee

Robert Bento Physics

Russell R. Bessette Chemistry

Eileen Carreiro-Lewandowski Medical Laboratory Science

Joseph C. Deck Chemistry

Robert Griffith Biology

Barry R. Haimson Psychology

A Faculty Pre-Medical Advisory Committee assists all pre-medical (pre-medical, pre-dental, pre-veterinary, etc.) students in their pursuit of admission to a professional school.

- The pre-med students should meet at least once each semester with an advisor from the committee who will review the student's program and progress and make recommendations.
- The committee serves as the principal source of advice in course selection for the pre-medical program.
- The committee actively seeks up-to-date information about medical school admission requirements and makes direct contact with the medical schools whenever possible.
- The committee prepares letters of recommendation going to the medical schools.
- The committee advises the Student Pre-medical Association and communicates frequently with pre-med students through e-mail and a university electronic bulletin board.

Women's Studies Minor

The UMass Dartmouth Women's Studies Program provides students the opportunity to study and analyze what it means to be female in contemporary society, to discover the historical factors that have shaped the current status of women from all backgrounds and countries and to explore paths to achieve equality for all people. The program's goal is to investigate how the notion of gender, the idea of difference between the sexes, has produced certain assumptions, expectations and stereotypes. Gender alone does not yield a full understanding of women's lives, so Women's Studies courses also examine other factors, such as race, class, culture, and sexuality. Students examine not only the obstacles and difficulties that affect women, but also the courage, cooperation and achievements that can guide positive responses to ongoing challenges.

Women's Studies constitutes both a subject matter and an approach to learning. Students receive close advising from the program director; a number of courses utilize a seminar format to allow the fullest possible participation by all students; and opportunities are available for both independent research and applications of classroom learning to field experiences.

Participating Faculty

Janet Freedman Education
Program Director

Roberta H. Hazen Aaronson Sociology and Anthropology

Diane Barense Philosophy

David Berger Economics

Eileen Carreiro Medical Laboratory Science

Magali Carrera Art History

Phyllis Currier Nursing

Tish Dace English

Jean Doyle Political Science

Ray Dumont English

Morton Elfenbein Psychology

Geraldine Gamburd Sociology

Cathy Houser English

Donna L. Huse-Sears Sociology

Barbara R. Jacobskind English

Gerard M. Koot History

Betty L. Mitchell History

Peter Owens English

Geraldine Phipps History

Roger Sorkin English

Gloria Waite History

Women's Studies Minor

Almost any academic major can be combined with a Women's Studies minor. Though a student may take WMS courses at any time, the minor cannot be formally declared until a student has earned 54 credits.

Requirements for the minor
Eighteen units of WMS credit, including at least three 300- or 400-level courses. Courses must be taken from at least three different departments. Students must maintain an overall GPA of 2.0 and a GPA in their major of 2.5.

Multidisciplinary Studies and Humanities/Social Sciences Majors
Although there is no Women's Studies major, as such, students in the College of Arts and Sciences interested in the program may elect to design an individualized course of study through the Multidisciplinary Studies major (requirements for which are located elsewhere in this catalogue). Students wishing to build their major around Women's Studies should see the Director of the Women's Studies Program.

Humanities/Social Science majors may also develop a Women's Studies emphasis as a part of that major. Students interested should see their Humanities/Social Sciences adviser.

Distribution Credit for Women's Studies Courses
WMS courses satisfy distribution requirements in the department in which they are cross-listed and as specified in the course description. Students can take individual courses from the Women's Studies course offerings.

Some WMS courses that are not cross-listed also satisfy social science or humanities distribution requirements; please see the Director for additional information.

As marked, many WMS courses also satisfy general elective requirements.

Note: For distribution requirements, and general education requirement, cross-listed courses follow the status they have in their offering department.

WMS 101 three credits **D**
Introduction to Women's Studies

Basic concepts and perspectives in Women's Studies, placing women's experience at the center of interpretation. With focus on women's history and contemporary issues, the course examines women's lives with emphasis on how gender interacts with race, class, sexual orientation, and ethnicity. The central aim is to foster critical reading and thinking about women's lives: how the interlocking systems of oppression, colonialism, racism, sexism, and ethnocentrism shape women's lives; and how women have worked to resist these oppressions.

WMS 102 (PHL 102) three credits
Philosophical Aspects of Feminism

An introduction to philosophical reasoning, analysis of arguments and developing of critical skills, through a consideration of various topics relevant to feminism. Topics may include: presuppositions about woman's nature, abortion, sex equality, affirmative action.

WMS 103 (ECO 103) three credits **D, E, O**
Cities, Minorities, and Poverty

Review and analysis of major social problems faced by cities; emphasis on origin, causes and possible solutions for poverty and minority problems.

WMS 107 (HST 207) three credits **C, D**
Women's History in the United States: Colonial to the Present

Survey of the history of women—black and white, native and immigrant, rich and poor—in the U.S. from colonial times to the present. Among the topics to be discussed are: women's role in agrarian vs. industrial society; women and the family; women in the labor movement; female friendships and organizations; the frontier experience; women's suffrage; sex and sex roles; and the birth and growth of the feminist movement.

WMS 110 three credits
Women in Contemporary American Society

This course explores mother-daughter relationships, women and religion, changing family life, the impact of race and ethnicity on women, and other topics pertinent to women's experience in contemporary American society.

WMS 111 (ECO 111) three credits **D, E**
Jobs and Discrimination

Basic analysis of problems of economic growth, job creation, and unemployment; structure of work and jobs will be explored, along with current issues surrounding the government's impact on inflation, taxation, and economic planning.

WMS 200 three credits
Special Topics in Women's Studies

Topics will be determined by the faculty member and will therefore vary; course may be repeated with change of content. This course will be cross-listed with an academic department.

WMS 203 (SOC 203) three credits
Social Welfare Policy
Prerequisite: SOC 101 or 102

This course will provide students with a theoretical framework and a cross-cultural perspective for understanding the role of the social services in our society. An exploration of the history, politics and economics of our social welfare system will be undertaken through discussion, guest speakers and field work.

WMS 204 (PSY 204) three credits
Social Psychology
Prerequisite: PSY 101

The study of experimental findings, theoretical and methodological issues in understanding the individual in a social context.

WMS 207 (NUR 207) three credits
Womens' Health Issues

Women's health needs throughout the life stages. The course explores the significance of women's reproductive capacity, in a physiological, psychological, and social context and provides a framework for discussion of related issues. The course presents basic health information to assist students in promoting positive personal health.

WMS 210 (PSY 210) three credits **W**
Research Methods
Prerequisites: PSY 101, 205

See course description in Psychology section.

WMS 212 (HST 212) three credits **C**
The Case of Lizzie Borden
3 hours lecture

Using primary source documents such as newspapers, wills, city directories, the federal census, etc., students will study the fascinating case of Lizzie Borden of Fall River who was accused of the brutal axe murder of her father and stepmother. Students will develop their skills in historical methodology, and participation in class discussions is emphasized.

WMS 214 (AAS 214; ENL 214)
three credits **C**
African-American Literature

Chronological survey beginning with Gustavus Vassa and Robert Hayden's "Middle Passage" and continuing through contemporary writers. Toward the end of the course there will be focus on new women writers and major writers through the 1990s.

WMS 228 (SOC 228) three credits
Sex Roles and Sexuality in American Society
Prerequisite: Permission of instructor

The changing definitions of the roles of men and women in American Society from our experience and from a social, historical, biological perspective. Class sessions will include the following: the development of male and female in the evolutionary system; human and animal sexuality; cross-cultural sexual identities; images of male and female in American literature, movies and the popular imagination; socialization and the development of sexual identity; problems of courtship and intimacy. Satisfies Social Science distribution requirement.

WMS 232 (PSC 232) three credits
Women and the Law

The constitutional and legal status of women in America. Topics include the scope of the equal protection clause, the right to privacy, and the "special" nature of women. The emphasis is upon the primary documents such as judicial opinions and statutes.

WMS 240 (SOC 240) three credits
Dynamics of Community Organization*

An analysis of the theory and practice of community organizing with particular emphasis on the development of social action and community development techniques on the grass-roots level. This course will be conducted as a seminar with student participation expected in class

*When a Women's Studies project is elected.

discussions. In addition, mini-lectures, field simulations, role-playing, guest speakers and field observations will be used. Satisfies Social Science distribution requirement.

WMS 245 (ENL 245) three credits **C**
Images of Women in Literature

A study of archetypes and stereotypes of women in literature from the ancient world to the present . Traditional literary criticism and the way authors have used images of women to create character, plot, and so on, will be examined.

WMS 246 (ENL 246) three credits **C**
Women Writers

When the subject matter is related to the minor: an examination of the relationship between the woman writer and her work through a study of literature by and about Black women.

WMS 298 one to six credits
Experiential Learning
Prerequisites: At least sophomore standing; permission of the instructor, department chairperson, and college dean

Work experience at an elective level supervised for academic credit by a faculty member in an appropriate academic field. Conditions and hours to be arranged. Graded CR/NC. For specific procedures and regulations, see selection of catalogue on Other Learning Experiences. (Formerly listed as Contract Learning.)

WMS 300 three credits
Topics in Women's Studies

Special topics in Women's Studies.
The topics will be determined by the faculty member and will therefore vary.

WMS 305 three credits **D**
Contemporary Feminist Theory and Practice

The theoretical works of contemporary feminism from Simone deBeauvoir to Adrienne Rich. The readings and discussion will be related to an examination of how theory has been applied in the lives of individual women and in the practices of women's organizations and institutions.

WMS 310 (HST 310) three credits **C, D**
America's Working Women

This course will examine the experience of American working women: black and white, native and immigrant, organized and unorganized from the colonial period to the present day. Because work is defined as productive labor, this course will examine women as paid and unpaid workers in the marketplace as well as in the home. Some of the areas of study will be women on the frontier, women in the mills and factories, labor union women, women in the professions, and the history and politics of housework.

WMS 317 (HST 317) three credits **C**
History of European Women

Critical examination of women's history from the Renaissance to the present. The course will deal both with remarkable and ordinary women. Extensive use will be made of recent research on the history of the family and social demography as well as the more traditional areas of political, intellectual, and economic history. While emphasizing Western Europe, the course will include some material from the Americas and other areas.

WMS 318 (HST 318) three credits **C**
Women's Biography and Autobiography

This course will examine the lives of various women in the United States, Great Britain, and elsewhere both from a literary and historical perspective. Examples of women whose lives will be studies are Charlotte Bronte, Sarah and Angelina Grimke, Charlotte Perkins Gilman.

WMS 324 (SOC 324 or ANT 324)
three credits
Women in Contemporary Society

The roles and status of women in contemporary societies are examined using an historical and comparative approach. The course integrates theory of sexual inequality and its relation to other forms of social inequality and empirical analysis of the actual conditions of women. Women's participation in social movements in the U.S. and Third World countries is addressed as part of the analysis of the changing roles and statuses of women. Satisfies Social Science distribution requirement.

WMS 332 (PSC 332) three credits
Sex Roles and Politics

The impact of gender as a variable in American politics. The course analyzes women in the electorate as office holders and as political participants, including participation in political organizations and lobbying groups. The latter part of the course addresses applied politics in campaign management.

WMS 336 (SOC or ANT 336)
three credits
Women and Social Policy

Family policy issues in the U.S. such as child care, family leave, job equity, and marriage and family relationships. U.S. public policy is compared with that of other countries.

WMS 338 (PSC 338) three credits
Woman As Citizen

The particular role which gender plays in defining citizenship. The course is a feminist critique of Western political thought. The analysis begins with the Greeks, and through historical, economic, and cultural analysis, defines American womanhood.

WMS 339 (PSC 339) three credits **D**
Women and Public Policy

The course is designed to develop an understanding of the public policy process, of how women's issues fare in that process and why, and of the strengths and weaknesses of women as participants in political process. The course will be taught from the feminist perspective and will thus expand the students' awareness of alternative approaches to political phenomena.

WMS 343 three credits **D**
Teaching and Learning About Women
The implications of gender and sex-role stereotyping on the educational aspirations and experiences of learners and how these intersect with class and racial bias. Through readings from philosophy, psychology, and literature students will explore the roots of gender-based attitudes and consider if and how assigned learning attributes should be changed or utilized to advance women's success as learners.

WMS 344 (ECO 343) three credits **E**
The Economics of Sex and Race Discrimination
Prerequisites: ECO 231, 232; or permission of instructor

The theory of labor markets and the problem of discrimination. Current problems facing women and minorities will be

Gen Ed Key

C	Cultural and Artistic Literacy
E	Ethics and Social Responsibility
G	Global Awareness
D	Diversity
W	Writing-Intensive Course
O	Oral Skills

*When a Women's Studies project is elected.

examined. Existing programs and trends will be explored.

WMS 346 (ENL 346) three credits **C**
Wise Women
Prerequisite: ENL 102

This team-taught course presents a multidisciplinary perspective of the phenomena of women and aging in American society. The experiences of older women are explored through literature, oral histories, and intergenerational class projects to determine the forces that affect quality of life and productivity in later life.

WMS 347 (ENL 347) three credits **C**
Special Topics in Women's Literature

The course explores a topic selected by the instructor. Some examples are Women's Non-Fiction Prose, Women's Biography and Autobiography, and Contemporary American Women Writers.

WMS 348 (ENL 348) three credits
American Women Playwrights
Prerequisite: ENL 102

Analysis, evaluation, comparison, and appreciation of plays by 20th-century American women playwrights and insights into their themes and the images of women which they create.

WMS 350 (SOC/ANT 350)
three credits
Readings in Sociological and Anthropological Literature I: Women and Islam
Prerequisite: Permission of instructor

Directed readings/analysis in selected topics.

WMS 355 (SOC 355) three credits
Social Work Practice*
Prerequisite: SOC 203

The knowledge, values and skills that underlie social work practice. We will consider the roles that social workers assume, the settings in which they work and the methods of intervention that are used in working with individual, groups, and communities. Issues related to cross-cultural social work will also be explored.

WMS 364 (HST 364) three credits **C, G**
Social and Cultural History of Russia

Topics pertaining to social classes, the development of serfdom, religion, and art and literature in Russia from the 9th Century to the present.

WMS 369 (ANT 369) three credits
Visual Symbols and Myth*
A study of the underlying structure and content of visual symbols, myth, and ritual, and an analysis of the social implications of these systems.

WMS 370 (ENL 370) three credits **C**
Women, Writing, and the Media
Prerequisite: ENL 260

Studying and writing about issues related to gender, gender-specific language, and the representation of women in various forms of media. The course focuses on discovering, exploring, researching, and writing about women's issues.

WMS 375 (PSY 375) three credits
Psychology of Sex Difference
Prerequisites: PSY 101, 205, 210

This course is designed to stimulate discussion among men as well as women, by exploring topics such as the development of sex differences, socialization practices, attitudes, values and role expectations which affect the self-concept and interpersonal relationships.

WMS 380 (ARH 380) three credits **C, D**
Feminist Perspectives on Art History
Prerequisites: ARH 101, 102, WMS 101; or permission of instructor

Analyzes the feminist critique of the history of art. This course will review recent critiques of both art and culture through an investigation of the production and evaluation of art and the role of the artist in Western and non-Western cultures.

WMS 385 (ARH 385) three credits **C**
Women Artists and the Histories of Art

Provides knowledge and understanding of the art made by women from the Late Medieval period through Contemporary periods of art. This study will be set in the context of specific social, familial, economic, and psychological conditions of the period in which the art was made. The course will familiarize students with recent feminist critiques of visual culture.

WMS 391 (HST 391, LST 391, AAS 391) three credits **C**
Topics in African History*
Prerequisites: HST 190 or HST 290 or written permission of the instructor

Advanced-level course for students with a background in African history. Topics will vary from year to year. Research papers will be required.

WMS 408 (SOC 408) three credits
Social Service Internship*

Course for students interested in social service careers. Gain valuable "hands-on" experience working in a social service agency/organization on campus or in the community. Students meet as a Seminar class to reflect on experience, to integrate practice with theory, and to further develop social work skills. Meet with instructor before registering to discuss agency placement.

WMS 421 (ENL 421) three credits **C**
Seminar: American Literature Theme*

Seminar in an American Literature Theme.

WMS 422 (HST 422) three credits **C**
Seminar in U.S. Women's History
Seminar in U.S. women's history. The writing of a substantial paper will be required. Content will vary with instructor.

WMS 490 three credits
Advanced Special Topic in Women's Studies

Special topics are offered. May be repeated with change of content. This course may be cross-listed with an academic department.

WMS 495 variable credit
Independent Study
Prerequisites: Upper-division standing; permission of instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area not otherwise part of the discipline's course offerings. Conditions and hours to be arranged.

WMS 196, 296, 396, 496 variable credit
Directed Study
Prerequisites: Permission of the instructor, department chairperson, and college dean

Study under the supervision of a faculty member in an area covered in a regular course not currently being offered. Conditions and hours to be arranged.

UMass Dartmouth/ Southern New England School of Law Three-Plus-Three Program

UMass Dartmouth and the Southern New England School of Law (located 3 miles from campus in North Dartmouth) have established a joint program that will offer significant advantages to interested, qualifying students. This program offers a fast track to a law degree in six rather than seven years. The program leads to the award of a bachelor's degree by UMass Dartmouth and a Juris Doctor degree by the Southern New England School of Law.

This program allows qualified University undergraduates to substitute the first year at the Law School for the senior year at the University, thus earning the Bachelor's Degree and the Juris Doctor Degree in six years instead of the normal seven. The program is aimed primarily at students who enter the University with a strong interest in law already formed, or who develop such an interest early on, and whose career goals and legal education needs can be well served by the Southern New England School of Law.

Responsibility for the program's operation rests with a Joint Programs Committee representing the two institutions. The University membership shall include at least one faculty member from the College of Business and Industry and at least one faculty member from the College of Arts and Sciences. All faculty actively engaged in pre-law advisement shall be invited to serve on the Committee.

Program students enjoy library privileges at both institutions throughout their residence at either institution.

Eligibility for Admission to the Law School

University juniors who meet the following requirements are eligible for admission to the Law School under the terms of the program:

- In compliance with American Bar Association Standard 502(a), successful completion by the end of the junior year of three-quarters (i.e., no less than 90 credits) of the work acceptable for the bachelor's degree at the University.
- 60 credits earned in residence at the University.
- Successful completion of all university, college and major requirements for the bachelor's degree, other than (a) free electives, and (b) requirements for which a first-year Law School course is a substitute acceptable to the student's major and college.
- A cumulative grade point average of 3.0 or better.
- Submission with the application for admission to the Law School of a joint letter of recommendation from the University members of the Joint Programs Committee.
- Fulfillment of all admissions requirements normally imposed by the Law School, including acceptable performance on the Law School Admission Test.
- At least two semesters of undergraduate pre-law advisement, as described below.

Participation and Advisement

Students interested in the program are encouraged to make their interest known to a pre-law adviser as early as possible, preferably before the end of the third semester, to insure adequate advisement in meeting the eligibility requirements for accelerated admission to the Law School.

Participants in the program are essentially a self-selected set of pre-law advisees. Students identify themselves as participants by declaring themselves to the Joint Programs Committee, by agreeing to meet a pre-law adviser on a regular basis, and by participating in an orientation visit to the Law School prior to application for admission. The purposes of advisement are to provide information about the program and to review the student's progress in meeting the requirements for admission by the end of the junior year.

Each year the University members of the Joint Programs Committee shall make an evaluation of all juniors in the program and prepare a joint letter of recommendation for each student applying to the Law School.

It is understood that pre-law advisement for purposes of the program is supplementary to, and not a substitute for, regular academic advisement by faculty in the student's major and college.

The University Senior Year/Law School First Year

Program students normally will be admitted only as full-time students in the Law School and will follow the usual course of study for full-time, first-year law students (31 credits).

Upon successful completion of the first year at the Law School, the 31 credits earned will be transferred to the University as free elective credits or appropriate credit toward requirements, sufficient to complete university requirements for the bachelor's degree. The student will then graduate from the University with the rest of his or her class.

The student's first-year law grades will not be included with the student's University grades in calculating the graduating grade point average.

Students who fail to complete successfully the first year of law school, or who elect for other reasons to withdraw, may return the next semester to the University without applying for readmission as bachelor's degree candidates. Any completed course work at the Law School will be treated by the University in the same was as other transfer credit.

University seniors in their first year at the Law School will pay the same tuition and fees to the Law School as do other first-year students. Their status at the University will be that of a non-resident degree candidate, as in the case of students studying abroad. The University, tuition and fees will be waived except for the "withdrawn on exchange" fee or other fee required to maintain the status.

Other Stipulations

Participation in the program is not a guarantee of admission to the Law School. However, the intent of the program is to attract qualified students who make a good match with the Law School's profile.

The Joint Programs Committee will make every effort to insure that students receive timely and accurate advisement at all stages of the program, however, it is the participating student's responsibility to meet the program's academic and eligibility requirements, to prepare adequately for the Law School Admission Test, and to comply with all admission procedures required by the Law School.

There is nothing to prevent a program student from applying for early admission to another law school or from transferring at a later date from Southern New England School of Law to another law school. However, it is the intent of the program to appeal to students who make a conscientious choice to attend Southern New England School of Law and complete their degree there.

Southern New England School of Law

Southern New England School of Law (SNESL) is located at Faunce Corner Road in North Dartmouth in a newly-constructed, state-of-the-art facility. SNESL offers full and part-time programs in its day division and a part-time evening/weekend program. Students in all programs receive a comprehensive legal education that grounds them in knowledge and understanding of the law, legal institutions, and the responsibilities of the bar.

SNESL is an independent, non-profit, educational institution approved by the Commonwealth of Massachusetts to award the Juris Doctor degree. Graduates are eligible to sit for the Massachusetts Bar Examination and can then also be eligible to take the Bar Examinations of certain other states depending on state requirements. SNESL is accredited by the New England Association of Schools and Colleges and is an active candidate for American Bar Association accreditation.

Contacts

Kevin Hargreaves History
UMass Dartmouth
508 999-8309

James C. Hasenfus Associate
Professor of Law
Southern New England School of Law
333 Faunce Corner Road
North Dartmouth, MA 02747
508 998-9600

Division of Continuing Education

The Division of Continuing Education is committed to serve the needs of those students who choose to pursue a degree on a part-time basis during evening hours or in the summer. Any person who has graduated from high school or holds a Certificate of General Education Development (GED) is entitled to enroll in undergraduate courses offered through the Division of Continuing Education. All credit courses offered are University of Massachusetts Dartmouth courses, and the grades earned are reflected in the student's grade point average at the university. Students may enroll in a single course, a number of courses, or a program leading to a Bachelor's degree.

In addition, each term, courses are offered for personal or professional development which carry no academic credit, and a few courses for professional certification may be offered which, at their completion, award Continuing Education Units (CEUs) or Professional Development Prints (PDP's).

Many students who attend the university through the Division of Continuing Education are working full time, have family responsibilities, and have a limited amount of time available to study and attend courses. These students may have attended a community college, may have started their coursework at the university directly after high school, or may have had years elapse between their high school and university careers. All are welcome and are encouraged as they achieve each level of their education. Whether students register for courses each Fall term, each Spring term, or continue through many terms, each is advised individually while progressing toward personal academic goals.

This flexible, individualized learning environment provides the opportunity for students, including those who are unsure of their ability to do college work, to explore academic courses, to return to school at a pace of their own choosing, to continue their education while enrolled in a degree program at another college or university, or to explore their personal interests.

Division of Continuing Education

Phone: 508 999-8071

Degree Candidacy
A student may earn 30 credits (the equivalent of 10 credit courses) before applying for degree candidacy or declaring a major. Anyone who has completed 30 credits with a minimum grade point average of 2.0 (the equivalent of a C average) is eligible to be accepted into a University of Massachusetts Dartmouth degree program leading to a Bachelor's degree in one of the majors listed here:

Undergraduate Degree Programs
At present, the Division of Continuing Education offers majors in the following disciplines:

College of Arts & Sciences
English/Literature
English/Writing and Communications
Humanities and Social Sciences
Psychology*
Sociology
Sociology/Criminal Justice
Sociology/Social Welfare

College of Business & Industry
Accounting
Management

College of Engineering
Electrical Engineering Technology
Mechanical Engineering Technology

For access to other majors, DCE students apply for admission through the Office of Undergraduate Admissions. When a student is accepted into a degree program, those courses that were successfully completed and which fulfill the requirements of the program will count toward graduation. All courses taken will appear on the student's transcript and will be calculated into the student's grade point average.

Tuition and Fees
Students who register through the Division of Continuing Education for credit-bearing courses pay charges based on the Fee Schedule for that Division. Students are charged a basic fee per academic credit and additional service fees. The listing of specific charges is available from the Office of Continuing Education. Tuition and fees are subject to change at the discretion of the governing authorities of the university.

Academic Counseling and Financial Aid Information
A staff of experienced professionals is available Monday through Thursday evenings to assist students in planning programs suitable to educational and career objectives. Work experience and other learning experiences may, in some instances, be translated into academic credit (see below).

The full range of financial aid programs is available to the Continuing Education student: grants, low interest educational loans and scholarships. Individuals are strongly encouraged to explore their eligibility for these programs.

Credit for Non-Traditional Prior Learning
Non-traditional prior learning is an innovative program that enables participants to gain academic credit based on previous learning experiences. It is designed for the returning adult student who would like to earn credits toward a degree, and is available to degree-seeking students. An individual's college-level skills and knowledge that have derived from prior learning or work experience will be documented during a one-semester workshop. Evaluation for credit of the documented learning experience will be completed at the end of each academic year.

Student Government
The Continuing Education Student Government (CESG) is the official representative voice of part-time students. CESG recommends all allocations for expenditures of student fees, and is instrumental in helping UMass Dartmouth respond to the special needs of Continuing Education students. A nominal fee is assessed each semester to support the CESG and activities and entities such as the Campus Center, the CESG scholarship, get-togethers, the Cooperative Learning Center, and a newsletter.

* Some Psychology courses required for graduation, especially upper-division ones, may not be conveniently available during evening hours; in some cases, evening students with a pressing need to graduate may need to take one or more courses during the day.

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Hogan, Richard A. Professor of Philosophy (1973); B.A. 1967, Middlebury College; M.A. 1969, Purdue University; Ed.M. 1989, Harvard University; Ph.D. 1974, Purdue University

Hogan, William V. Professor of Economics (1978); Chairperson, Department of Economics; B.A. 1970, Southeastern Massachusetts University (UMass Dartmouth); M.A. 1974, Ph.D. 1976, Cornell University

Holloway, Memory Assistant Professor in Art History (1996); B.A. 1968, University of Redlands; M.A. 1979, Ph.D. 1995, Courtault Institute of Art, London University

Holt, William R. Professor of Psychology (1973); B.A. 1967, Williams College; M.A. 1972, Ph.D. 1973, Brown University

Houser, Catherine, Associate Professor of English (1987); B.A. 1978, M.F.A. 1986, Arizona State University

Hsu, Jong-Ping Professor of Physics (1978); B.S. 1962, National Taiwan University; M.S. 1965, National Tsing-Hwa University; Ph.D. 1969, University of Rochester

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Ibara, Richard M. Professor of Biology (1971); B.A. 1963, M.A. 1965, University of Hawaii; Ph.D. 1970, University of California

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McNeil, Ronald D. Dean, College of Business (1992); Professor of Management (1992); B.A. 1964, Ambassador College, England; M.S. 1979, Ph.D. 1982, Memphis State University

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Miraglia, Anthony J. Professor of Fine Arts (1975); Chairperson, Department of Fine Arts; B.F.A. 1973, Cleveland Institute of Art; M.F.A. 1975, Syracuse University

Mitchell, Betty L. Professor of History (1978); A.B. 1969, Douglass College; M.A. 1972, Ph.D. 1979, University of Massachusetts Amherst

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Murphy, Daniel J. Interim Dean, College of Engineering. Chancellor Professor of Electrical and Computer Engineering (1962); B.S. 1960, New Bedford Institute of Technology (UMass Dartmouth); M.S. 1966, Ph.D. 1969, Northeastern University; Registered Professional Engineer

Nardone, Steven C. Professor of Electrical and Computer Engineering (1984); Chairperson, Electrical and Computer Engineering Department; B.S.E.E., 1972, M.S.E.E., 1974, Ph.D., 1982, University of Rhode Island

Nee, James M. Professor of English (1971); B.A. 1959, M.A. 1963, Boston College; Ph.D. 1970, University of Michigan

Nelles, William Associate Professor of English (1995); B.A. 1979, M.A. 1981, Ph.D. 1987, Northern Illinois University

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Owens, Peter Professor of English (1981); A.B. 1968, Wesleyan University; Ed.M. 1980, Ed.D. 1982, Harvard University

Payton, Karen Associate Professor of Electrical and Computer Engineering (1989); B.S. 1977, Carnegie-Mellon University; M.S.E.E. 1981, Ph.D. 1986, The Johns Hopkins University

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Pennington, Elisabeth A. Dean, College of Nursing (1993); Professor of Institutional Nursing (1993); R.N. 1963, Lawrence Memorial Hospital; B.S. 1969, Boston University; M.Ed. 1969, Ed.D. 1974, Columbia University

Perry, Ronald S. Professor of Textile Sciences (1973); B.S. 1958, New Bedford Institute of Technology (UMass Dartmouth); M.S. 1960, M.S. 1962, Ph.D. 1965, Lowell Technical Institute

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Smith, J. Donald Chancellor Professor of Chemistry and Biochemistry (1982); A.B. 1965, Columbia University; Ph.D. 1969, University of Chicago

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Campus visits

Travel
Major airlines, as well as Amtrak, serve both Boston and Providence. By car, the UMass Dartmouth campus is readily accessible from both I-195 and Route 6.

From Boston and environs:
(75 minutes)

Route 95 or 93 south to Route 24 south; at exit 12, Route 140 south to exit 2; Route I-195 west to exit 12A

From New York, New Haven, Providence (points west):
(35 minutes from Providence)

Route 95 north to Providence; exit at I-195; I-195 east through Fall River to exit 12

From Albany, Springfield and Worcester:
(75 minutes from Worcester)

Route I-90 (Mass Pike) east to I-495; I-495 south to Route 24 south; Route 24 south to exit 2 (I-195); Route I-195 east to exit 12

From Cape Cod (points east):
(45 minutes from Hyannis)
Route I-195 west through New Bedford to Exit 12A

From exits 12 or 12A:

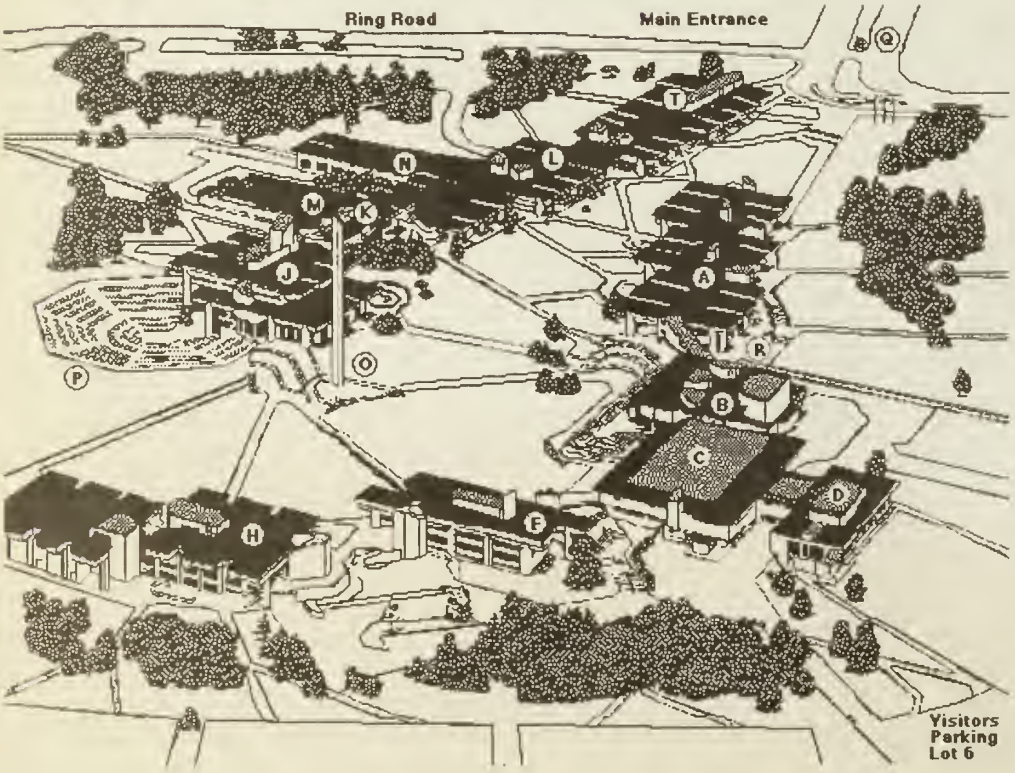
South on Faunce Corner Road for one mile to Route 6. Cross Route 6 to Old Westport Road; bear right on Old Westport Road, travel for one mile. Campus is on left.

Parking

Visitors to the campus and the Graduate Admissions Office may park in the Admissions Parking Lot. Proceed through parking lot 6 to any space marked "Admissions Visitor."

Directions to the Purchase St. campus in New Bedford

From I-195, take exit 15 marked "Downtown" (Route 18 south). Take first exit off Rte. 18 (Purchase St.). At end of ramp, take a left turn onto Purchase St. In one block you'll come to the New Bedford campus on your right.



Key

A	Liberal Arts and Business Building (Group I)
B	Main Auditorium
C	MacLean Campus Center
D	Resident's Dining Hall
E	Residence Halls (not shown)
F	Foster Administration Building
G	Power Plant, Campus Police (not sho
H	Visual and Performing Arts Building (Group VI)
I	Tripp Athletic Center (not shown)
J	Library
K	Lecture Halls
L	Science and Engineering Building (Group II)
M	Textile Building
N	Violette Building
O	Tower (Campanile)
P	Amphitheater
Q	Information Booth
R	Auditorium Annex
T	Dion Science and Engineering Buildir

UMASS Dartmouth
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Directions for Correspondence or Inquiries

By mail

The departments of the university receive mail through a central post office. Address correspondence to a specific individual or department as follows:

Name of Individual
Name of Department
University of Massachusetts Dartmouth
285 Old Westport Road
North Dartmouth, MA 02747-2300

By phone

The university has both a central switchboard and direct-dial phone lines. The partial listing given below will assist one in finding key people; but the switchboard staff are always ready to assist, weekdays 7:00-6:00 pm. University police answer the central phone after these hours.

Central phone number (switchboard):508-999-8000

Central FAX number: 508-999-8901

INTERNET address:
[<first initial><lastname>]@UMASSD.EDU

Office hours

University office hours are generally 8:30 to 4:30, Monday through Friday, extending into evening hours for key offices that work with evening students, until 7 pm, and with a broader schedule of hours for the library. We recommend that you call ahead for an appointment.

Inquiries should be addressed to the following offices or officers:

Topic	Officer or Office	Phone 508-999-XXXX	FAX 508-999-XXXX
Academics, General	Office of Academic Affairs	-8024	-8375
Arts and Sciences	Dean, College of Arts and Sciences	-8268; 8270	-9125
*Business and Textile Sciences	Dean, College of Business and Industry	-8432	-8776
Engineering	Dean, College of Engineering	-8539	-9137
Nursing	Dean, College of Nursing	-8586	-9127
Visual and Performing Arts	Dean, College of Visual and Performing Arts	-8564	-9126
Accounts—Student	Bursar	-8087	-9138
Admission, Alternative	Director, College Now Program	-8704	-9257
Admission, Graduate	Office of Graduate Studies	-8604	-8183
Admission, Undergraduate	Admissions Office	-8605; 8782	-8785
Advancement, Alumni Affairs	Director, Institutional Advancement	-8760	-8183
Academic Advising	Director, Academic Advising	-8519	-8850
Equal Opportunity,Diversity, & Outreach	Assistant Chancellor	-8008	-9201
Business, Fiscal Affairs	Fiscal Affairs Division	-8051	-9138
Campus Housing	Director of Housing	-8140	-8949
Continuing Education, Extension	Dean, Division of Continuing Education	-8071	-8621
Courses, Records, Registration	Office of University Records	-8615	-8183
Enrollment Management	Assistant Chancellor	-8018	-8375
Personnel	Director, Human Resources	-8060	-8869
Facilities, Plant, Grounds	Director, Physical Plant and Facilities	-8100	-9103
Financial Assistance	Director, Office of Financial Aid	-8632	-8935
Foundation, Scholarships	Executive Director, UMass Dartmouth Foundation	-8760	-8773
Library	Dean of Library Services	-8663	-8987
News and General Information	Director, News/Public Information	-8765	-9200
Police, Safety, Security	Chief of Safety and Security	-8107	-8122
Student Services, General	Vice Chancellor of Student Services	-8600	8626
Student Life, Activities	Dean of Students	-8645	-8626
Transcripts	University Registrar	-8615	-8183

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